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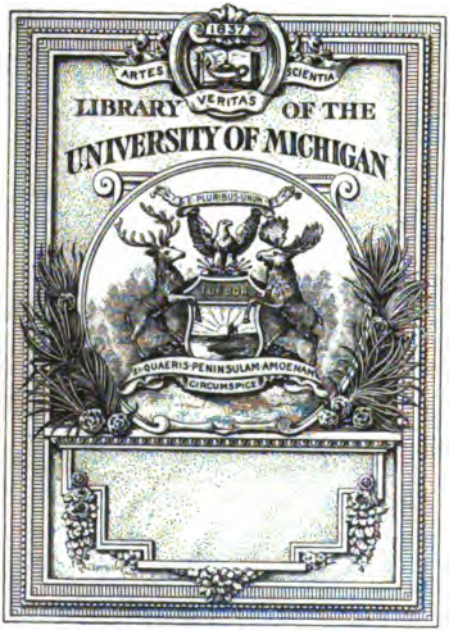
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NATURAL THEOLOGY.

VOL. I.

G. WOODFALL, ANGEL COURT, SKINNER STREET, LONDON.

NATURAL THEOLOGY;

OR

ESSAYS

ON THE

EXISTENCE OF DEITY

AND OF PROVIDENCE,

ON THE IMMATERIALITY OF THE SOUL,

AND

A FUTURE STATE.

BY THE REV. ALEX. CROMBIE,

LL.D., F.R.S., AND M.R.S.L.

IN TWO VOLUMES.

VOL. I.

LONDON:

PRINTED FOR R. HUNTER, 72, ST. PAUL'S CHURCH-YARD,
AND T. HOOKHAM, OLD BOND STREET.

M.DCCC.XXIX.

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PREFACE.

If the talents of the author were equal to the importance of the subjects, discussed in these volumes, he might reasonably anticipate their favourable reception. Entertaining no such vain presumption, and candidly acknowledging his obligations to several writers, who have preceded him in this field of enquiry, he is at the same time inclined to hope, that the Theologist, or the Metaphysician, who may honour these Essays with a perusal, will not find his time fruitlessly expended, or that they present nothing new, which may be worthy of his consideration.

The work is offered to the public, under the persuasion, that it may be useful in contributing somewhat to check the

spread of the most baneful delusion, that can darken the human mind—a delusion which, there is reason to apprehend, extends farther, than is generally believed—much farther, certainly, than every friend to religion and humanity would wish. In this country, the degrading doctrine has, in some recent publications, been rather insinuated, than openly avowed. In a volume, entitled, "Academical Questions", by the late Sir William Drummond, the hypothesis of Atheism has been advocated without disguisement, and with no reserve. On the continent, several works have lately appeared, by the authors of which it has been either openly inculcated, or insidiously recommended. Some of them being scientific productions, but with the poison covertly infused, find many readers, who would shrink from the perusal of a book, professing the advocacy of an infidelity so noxious and so debasing.

The author is aware, that abstract dis-

cussions are but little accordant with the prevailing taste of the present age, and that they are not likely to be honoured with the meed of popularity. But, if these volumes should, in any degree, contribute towards the prevention or correction of an evil, which would extirpate religion, virtue, and human happiness; and should serve to confirm those, who acknowledge no other guide, than the light of nature, in their belief of Deity, Providence, and a Future state, the author will attain his object.

In the execution of the work, he has studiously endeavoured to state the objections of the adversary with fairness and impartiality. He is aware, that he may perhaps incur the reprehension of some readers for the freedom, with which he has examined the metaphysical arguments of Clarke and others. In his justification he might plead, that not only has their validity been questioned, but even their injurious tendency asserted, by philosophers and divines distinguished

by their talents, and eminent for their piety. The animadversion pronounced by Pope on such metaphysical reasonings is almost too well known to require citation.

"Be that my task, replies a gloomy Clerk,
Sworn foe to mystery, yet divinely dark,
Whose pious hope aspires to see the day,
When Moral Evidence shall quite decay.

"Let others creep by timid steps and slow,
On plain experience lay foundations low,
By common sense to common notions bred,
And last to Nature's cause through Nature led,
All-seeing in thy mists, we want no guide,
Mother of arrogance and source of pride!
We nobly take the high Priori Road,
And reason downward, till we doubt of God."

DUNCIAD, BOOK IV.

Without expressing his concurrence in this censure to its full extent, the author rests his defence on the acknowledged fact, that a fallacious argument injures a good cause, and on the moral truth, that candor forbids the employment of reasoning, which we know to be false, under the hope, that it may possibly escape detection.

In respect to the diction, the author has endeavoured to consult precision and perspicuity, two essential qualities of style, in every composition, but in metaphysical and argumentative productions, peculiarly indispensable. Influenced by an earnest desire to impress his reasoning, he is conscious, that he has been led into some repetitions, an error, which he hopes, that the motive will extenuate, if not excuse.

There is one misstatement, which though not affecting the argument, he feels it his duty to acknowledge, and to correct. He has represented the story of La Roche as a matter of fact. When the narrative made its appearance in the "Mirror," a periodical work published at Edinburgh in the year 1779, it was well known, that the philosopher, to whom its author alluded, was Mr. Hume; and from the air of truth, with which the relation is invested, it was supposed by almost every reader, not favoured with the confidence of the essayist, or the

philosopher, and is by some even still believed, that the paper detailed a reality, and not a fiction of Mr. Mackenzie, the elegant author of the "Man of Feeling." Into this error, the Writer of these volumes, then a student at college, was naturally led; nor was he undeceived, until the "Life and Writings of Mr. Home," recently published by the author of the narrative, came into his hands; but unfortunately too late to exclude the error from the work.

York Terrace, Regent's Park,
20th July, 1829.

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NATURAL THEOLOGY,

ETC.

TO THE READER.

The examination of "Spinoza's System", to which there is a reference in p. 339, will be found at the end of the Second Volume.

ERRATA.—VOL. I.

Page 52, line 14, *for* learly, *read* clearly.
127, line 10, *for* than they, *read* than that they.
204, note, *for* William Drummond, *read* Sir William Drummond.
370, line 23, *for* Hume, *read* Home, (Lord Kames.)
444, line 18, *for* follow, *read* ensue.
511, line 8, *read*, partly by capillary attraction and the influence of solar heat.

INTRODUCTION.

In perusing the pages of theological controversy, we have too frequent occasion to lament the illiberal and bitter spirit, which betrays itself in the sentiments and conduct of the contending parties. It would seem as if each laboured, not so much to correct the presumed errors, as to degrade the characters of its opponents. Bigotry, ever blind to the real interests of truth, and substituting violence for argument, reproach for admonition, would compel her adversaries to see with her eyes, to think as she thinks, and to believe as she believes. In all her proceedings, passion and prejudice usurp the authority of reason; and when intemperate feelings have been suffered to predominate, each party, abandoning argument, resorts to all the asperity of invective and abuse, loading its oppo-

nents with the most offensive imputations, exhibiting them to the world, as enemies to mankind, and stigmatizing them as objects of merited detestation. This surely is not the spirit, nor this the temper, in which error is to be corrected, truth to be investigated, or knowledge to be imparted. Nothing can be more absurd, than to hope for the conviction of an adversary by obloquy and detraction. Vituperation and calumny may exasperate, but they cannot convince. Feelings mutually repulsive, and heated by charges invidious and unjust, engender a spirit of pertinacity and repugnance, which the power of argument is incapable of subduing, and which even the conviction of error, in the mind of the offended party, is unable to repress. The contest, which may have commenced in reason, is continued in passion.

But though it is easier, and therefore more common, to defame than to refute, to revile than to convince, it is by the bigot only, or the fool, or the fanatic, that the illiberality and intemperance of either party can be regarded with approbation. Candid and reflecting minds contemn folly,

as they hate uncharitableness, and disdain injustice. Studious of truth, they listen only to reason; to her tribunal solely would they have mankind to appeal, and to her jurisdiction alone will they condescend to bow. They are well aware, that it is to be neither hoped nor desired, that all men should think alike. They are aware, that different minds view the same object in different lights—that belief is the necessary result of evidence*—that collision of sentiment is ultimately favourable to the interests of truth, and that to vilify an adversary by coarse reproach or slanderous imputations, is to adopt a procedure equally impolitic as unjust.

It is therefore matter of deep regret, that

* Though belief is independent on volition, and therefore involuntary error is not criminal: it is not to be hence inferred, that *he* is not reprehensible, who, instead of searching for truth in sincerity of heart, seeks only such arguments, and courts such views, as have a tendency to confirm him in his favourite opinions. For, though he cannot but believe as the evidence directs, yet, accommodating that evidence to his own wishes, and voluntarily excluding every other from his regard, his error, if he err, is culpable; and if he do not err, his belief is chargeable with all the demerit of voluntary ignorance.

some theologians and philosophers, when investigating the causes of Atheism, have suffered their indignation against its adherents to stifle the kindly feelings of charity, urging them to the degrading use of intemperate language, and also to invidious allegations, which experience disproves, and calm reason would condemn. In the ardency of their zeal for the cause which they advocate, moved with detestation of this baneful infidelity, as destructive of religion, of virtue, and of human happiness; impressed also with a deep conviction, that there is no truth so clear, as there is none so momentous, as the existence of Deity, they have been too hasty in affirming, that depravity of heart and immorality of conduct are the universal and only parents of Atheism. The libertine, they allege, first dreads, and then disbelieves, the being of a God. He begins, they say, with profligacy, and ends with infidelity. They charge him with abandoning his faith in Deity, Providence, and a future state, because he feels it his interest, that they should have no existence. Hence they are prompted to indulge in the asperity of invective

against the Atheist, as a monster scarcely deserving to be tolerated in society,—as a creature wretched in himself, and a curse to mankind. They feel it their duty to regard with sentiments of commiseration and sympathy a fellow-creature, who labours under some corporeal defect, or mental infirmity. They pity the blind, the maimed, the deaf, and the dumb; nor would they consider any terms of reprobation too harsh for the man, who should cruelly upbraid the idiot with his fatuity, or the lunatic with his insanity. Yet there are men, there are Christians, who, while they acknowledge, and justly represent Atheism to be the most degrading and the most deplorable of all human evils, cannot spare one feeling of compassion for the deluded and unhappy Atheist, but pursue him with a spirit of rancorous hostility. With them, his impenetrability to argument is a crime, and his blindness unpardonable impiety.

Now, while I most cordially concur with every friend to piety, virtue, and human happiness, in regarding the baleful tendency of Atheism with sentiments of un-

mitigated horror, and while I deprecate its spread with all the energy of feeling, of which my soul is capable, I cannot but consider, that this unqualified censure, and these indignant reproaches, are somewhat unjust; and no less repugnant to the mild spirit of philosophy, than irreconcileable with the character of that religion, which inculcates the duties of meekness, justice, and benevolence. It is not by the exhibition of angry feelings, and intemperate passions, that the Christian can exemplify the efficacy of his faith, or recommend it successfully to the adoption of others. The man, who professes a creed which he disbelieves, is a hypocrite; and he, who poisons the minds of others with dogmas, which he does not believe, is equally a hypocrite, and gratuitously criminal: but it can be no crime, because it is no voluntary act, to yield to that evidence, which seems in the balance to preponderate. Atheists are not universally men of profligate lives, or licentious morals. Whatever may be the depravity of some, it cannot be questioned that many, if not the majority, of those who espouse this wretched and debasing

doctrine, unhappily believe, and have deliberately adopted the hypothesis, which they profess. And if it be true, that scepticism and immorality have a reciprocal influence, each in certain instances generating the other, when we find Atheistical principles and immoral conduct associated in the same character, it becomes a question, which we ought not surely to decide unfavourably without sufficient evidence, which was the cause, and which the effect —whether the depravity originated from the creed, or the creed was the result of the depravity. One thing, however, is clear, that, while scoffs and sneers at truths held sacred are justly visited with the sharpest reprobation, calm argument, on the other hand, proceeding from the love of truth, and dictated by honest conviction, is entitled to respect, and claims the courtesy of a mild and dispassionate reply. And, if the sceptical controvertist offer his opinions to the public in the true spirit of philosophy, persuaded in his own mind, that truth can do injury, we may perhaps impeach his judgement, but cannot justly arraign his motives. The feeling of horror,

of which every Theist is conscious, when he hears the existence of a Supreme Being denied, is confessedly natural; and, when the character of that adorable Being is blasphemed, is felt to be irresistible: but in the former case we should bear in mind, that anger or hatred are not the passions, which on this occasion should occupy the heart. Where we have no reason to suspect disingenuity or dissimulation, our indignation should be checked by the reflection, that belief is not subject to our control—that it is necessarily governed by the evidence presented to us—and that the man, who really perceives not sufficient proof of the existence of Deity in the phenomena of nature, is more an object of pity than abhorrence*. To rail at such a man—to assail him with reproaches, or to rouse against him vindictive feelings, is equally

* It is considerately observed by a learned German professor—"Miserandi tamen potius sunt, et sine ira et studio rectius edocendi, quam graviter objurgandi et insectandi, quicunque hujusmodi errori dediti fuerint, siquidem cum ejusmodi opinione mere theoretica vel magna morum honestas conjuncta esse potest."—*Wegscheideri Institutiones Theologicæ Christianæ Dogmaticæ.*

unworthy of the philosopher and the Christian. He, who believes himself to be the product of Chance or of Necessity, and that he lives in a world, over which there is no presiding Power; persuaded, also, that he shall die like the dog or the ox, is surely not a fit subject for invective or abuse. A creed, so miserable and so debasing, may well excite compassion for him who maintains it, but ought not surely to provoke invective, or excite resentment. The evils of life are sufficiently severe, and numerous enough, to teach us all, that, without the consolations of religion, man must be either sunk in apathy, or must, under the pressure of calamity, be a hopeless and wretched being. While the sky is serene, the spirits gay, and the surrounding scene delightful, the want of religious principles may be little felt, if felt at all: but when the clouds gather, the tempest descends, and the heart sinks, it is only the conviction of a presiding Providence, who rules the elements, that can arm the mind with stedfast fortitude. Atheism chills and debases the soul. Its firmness is rather the absence of feeling—

a stoicism of temper—than the rational energy of a mind sensible of calamity, yet fortified against its stroke by the consolations of religious truth. The man, who begs his bread from door to door, and knows not where at night to lay his head, but believes in the existence of a superintending Providence, assured that no evil can befal him without His permission; that his sufferings are wisely designed for his benefit, and if borne with resignation will terminate in his good, is far less an object of compassion than the Atheist, "clothed in purple, and faring sumptuously every day," who, when the hour of affliction comes, has neither the conviction of a Providence to soothe his sufferings, nor a beam of hope beyond the grave; and who, in the day of prosperity, is visited with the anticipation, that death will come soon, and may come suddenly, to annihilate all his pleasure, and to consign him to dark oblivion, and everlasting insensibility. If we feel towards the unhappy man that sympathy, which reason recommends, and religion prescribes, it will be our earnest desire to rescue his mind from

so baneful a delusion, not by invective, which can only irritate, but by mild address and rational argument.

Habit, I am well aware, is wonderfully powerful, in reconciling us to circumstances, which we are unable to control; we know also, that the repeated contemplation of a terrific or disgusting object mitigates the feeling, which its exhibition at first excited. Hence some Atheists look forward to death without any sentiment of terror, and apparently without any feeling of regret. But surely, if existence have any value, we cannot part with it without some reluctance. The thought of annihilation, unless to the man who dreads irremediable suffering, must be a painful sentiment; nor can it be a matter of indifference to any thinking being, when oppressed with calamity and sunk in grief, whether "his afflictions come from the dust, and his troubles spring out of the ground," or they be the ordinations of a wise and benevolent Power, who in all his dispensations consults our happiness.

To assert, that immorality is the only source of scepticism,—that men become

Atheists because they wish to be Atheists,—that they hate the restraints of religion, are conscious of the depravity of their conduct, and, dreading the visitations of Divine indignation, renounce, or rather wish to renounce, all belief in God, and futurity, is an assertion, which, though perhaps well founded in some cases, yet, as a universal proposition, is uncharitable and false. There are many, who have adopted this gloomy hypothesis, whose moral conduct is irreprehensible. But, while this fact is admitted, I would not be understood to signify, that I conceive a steady and habitually upright deportment to be by any means reconcileable with the principles of the Atheist. If uniformly virtuous, he would be chargeable with egregious indiscretion and folly. For, while from a sense of interest he might obey the general law, I mean, the subserviency of virtue to worldly prosperity, prudence would require, that disbelieving in a God and a future retribution, he should also avail himself of every exception. In such cases we have no security against his violation of moral duty, but either what is termed a feeling of ho-

nour, a very uncertain and capricious principle, or the fear of detection, notwithstanding an apparent possibility of escape.

I am well aware, that, by early education, we may imbibe a distaste for every mean and dishonourable action, and that this principle may influence our conduct in future life; but how weak it proves to be, when opposed to powerful temptation, daily experience serves to demonstrate. One thing seems undeniable, that the Atheist cannot justly claim that confidence, which, other circumstances being equal, we should naturally repose in the man, who believes in Deity, in Providence, and in a future existence. But, how irreconcileable soever the principles of the Atheist may be, either with themselves, or with his conduct in common life, and how detrimental soever to the happiness of mankind; we should still bear in mind, that Atheism is a creed, which few would adopt from choice, and that belief is a state of mind, which is not under our command. The soul of that man must be strangely constituted, who would rather refer his origin to chance, than to a wise and bene-

volent Cause; who would rather believe that he exists here, the sport of accident, than as under the protection of infinite power and sovereign goodness; and who would rather be persuaded, that he shall perish like a beast of the field, than live hereafter in a state of felicity, attainable by virtue. If there are few, if any, minds so constituted, is it not illiberal and unjust to impute to the Atheist invidious motives, and to ascribe his destitution of religious principles to a corrupted and depraved heart?

It has been remarked, that Atheism is a gloomy hypothesis. This position may perhaps be denied. It may be contended that the Atheist enjoys the pleasures of life with equal relish as the Theist or the Christian; that you behold him as cheerful at the feast, as lively in conversation, as active in business, and as contented and happy. This assertion, with whatever plausibility it may plead experience in its support, may be warrantably pronounced to be utterly false. It is directly repugnant to the constitution of our nature. The semblance of a cheerful and contented

spirit is widely different from the spirit itself. The countenance may smile by sympathy, while the heart aches within. The fool may laugh, but it is still the laugh of folly. That happiness, whatever the sceptic may affirm, must be hollow and unsubstantial, which is not accompanied with sentiment, and has not religion for its basis. And there are hours in the life of every man, subject as he is to many sad vicissitudes and sorrows, in which, without the consolations of religious truth, he must, if not devoid of feeling, be a wretched and pitiable being. To deny that a belief in God, a faith in Providence, and the hope of immortality, serve to alleviate the pains and soothe the anguish of affliction, is to insult our reason, and contradict our experience.

But, even if human life were a scene of unmixed enjoyment, the Sceptic would be a stranger to that refined and sublime gratification, of which the Theist would be conscious, and which constitutes a source of his highest happiness. We know, that every accidental good is less grateful to the feelings, than a benefit conferred by

an acquaintance, or a friend. In the former case, it is a pure sensation; in the latter, the sensation is combined with sentiment, and heightened by reflection. If a gift possess intrinsic value, that value is enhanced by the pleasing conviction of the benevolence of the donor. If chance should present it, would it be equally esteemed? Gratitude is a pleasurable feeling; and the kindly affection of others towards us, as evinced by acts of beneficence and friendship, while it awakens in our breasts a reciprocal emotion, forms one of the most delightful springs of human enjoyment. Contemplate the man, on whom fortune has accidentally bestowed a favour—he is pleased; view the same man, having received a similar favour from a friend,—regard his countenance, see the tear of gratitude stealing down his cheek, behold his breast swelling with emotion, and then say, which yields the higher gratification. Imagine the feelings of Cræsus, who was saved from impending death by the interposition of his son; would he have been conscious of the same feelings, or of equal delight, if some lucky contin-

gency, where there was neither affection nor design, had been the means of his escape? The question must be answered in the negative, and the application is obvious. The reply of the pious and venerable La Roche to the celebrated David Hume will perhaps be recollected by some of my readers*. The old man had suffered a severe domestic affliction in the loss of his wife, and had himself recently recovered from a dangerous illness, to which recovery the philosopher by his kind attentions had materially contributed. "I have been thanking God," said the excellent clergyman, "for my recovery." "That is right," replied Mr. Hume. "I would not wish," continued the old man hesitatingly, "to think otherwise; did I not look up with gratitude to that Being, I should barely be satisfied with my recovery, as a continuation of life, which, it may be, is not a real good. Alas! I may live to wish that I had died;

* In this beautiful and interesting story, as told in the Mirror, the name of Mr. Hume is not mentioned; but that he was the person, to whom the author alluded, there can be no doubt.

that you had left me to die, sir, instead of kindly relieving me (he clasped Mr. Hume's hand); but, when I look upon this renovated being as the gift of the Almighty, I feel a far different sentiment—my heart dilates with gratitude and love to Him, and is prepared for doing His will, not as a duty, but as a pleasure, and regards every breach of it, not with disapprobation, but with horror." "You regret," said he, on another occasion, "when my daughter and I talk of the exquisite pleasure derived from music, your want of musical powers and musical feelings; it is a department of soul, you say, which has almost been denied you, which, from the effects you see it have on others, you are sure must be highly delightful. Why should not the same thing be said of religion? Trust me, I feel it in the same way, an energy, an inspiration, which I would not lose for all the blessings of sense, or enjoyments of the world, yet, so far from lessening my relish of the pleasures of life, methinks I feel it heighten them all. *The thought of receiving it from God adds the blessing of sentiment to that of sensation in*

every good thing I possess; and when calamities overtake me,—and I have had my share,—it confers a dignity on my affliction, so lifts me above the world. Man, I know, is but a worm; yet, methinks, I am then allied to God." Such had been, and such afterwards were, the afflictions of this excellent man, and such the patient resignation, and firm fortitude, with which he bore them, that the philosopher never recollected the story, without expressing his regret, that he had ever doubted.

This acknowledgement of the superiority of religious principles, and of the comparative inefficacy of his own philosophy, in the hour of suffering, furnishes, surely, sufficient evidence that the scepticism of Hume can hardly be considered to have been of his own choice. How subversive it was of his happiness, may be learned from his own confession,—a confession, which, I am persuaded, no man can peruse, and retire from the contemplation of the picture there exhibited, without the most ardent wishes, that he may never become a Sceptic, and without sentiments of pity rather than indignation against the

unhappy subject of such perplexing doubts, harassing distractions, and melancholy fears. "Methinks I am", said Hume, "like a man, who, having struck on many shoals, and having narrowly escaped shipwreck in passing a small frith, has yet the temerity to put out to sea in the same leaky weather-beaten vessel. . . . . My memory of past errors makes me diffident for the future. The wretched condition, weakness, and disorder of the faculties I must employ in my inquiries, increase my apprehensions. And the impossibility of amending or correcting these faculties reduces me almost to despair, and makes me resolve to perish on the barren rock, on which I am at present, rather than venture myself on that boundless ocean, that runs out into immensity. This sudden view of my danger strikes me with melancholy. . . . . I am affrighted and confounded with that forlorn solitude, in which I am placed in my philosophy, and fancy myself some strange, uncouth monster, who, not being able to mingle and unite in society, has been expelled all human commerce, and left utterly aban-

doned, and disconsolate. Fain would I run into the crowd for shelter and for warmth, but cannot prevail with myself to mix with such deformity. . . . . When I look abroad, I foresee on every side dispute, contradiction, anger, calumny, and detraction. When I turn my eye inward, I find nothing but doubt and ignorance. . . . . Every step I take is with hesitation, and every new reflection makes me dread an error and absurdity in my reasoning. . . . . Where am I, or what? From what causes do I derive my existence, and to what condition shall I return? Whose favour shall I court? And whose anger must I dread? What beings surround me, and on whom have I any influence, and who have any influence over me? I am confounded with all these questions, and begin to fancy myself in the most deplorable condition imaginable, environed with the deepest darkness, and utterly deprived of every member and faculty." *

Is such a man an object of envy? Does this pitiable state of mind present any in-

* *Hume's Treatise of Human Nature*, Book I, Part 4, Sect. 7.

ducement to become a Sceptic? Does it furnish any evidence for believing, that infidelity was an object of his own election? Could any pleasure arising from the love of distinction, or the absence of religious fears, in a man, whose moral conduct was considered to be inoffensive, compensate for the gloom and melancholy, which, in the hours of solitude, of which he had many, occasionally overwhelmed him?

That a person, abandoned to profligacy, or inured to villainy, conscious of his own depravity, and trembling at the anticipation of future retribution, may wish to shake off the terrors of religion, and become an Atheist, may be true. It is possible, also, that by banishing reflection, and stifling the voice of reason, he may believe himself an Atheist; but his infidelity is not founded in conviction. It is the scepticism of convenience, and not of reflection. It is a profession, more than a creed. Dismissing then the imputation of all invidious motives, let us briefly inquire into the intellectual causes, why men become Atheists; why the phenomena of nature fail to convince them that a Deity exists.

And while we state the causes, we shall offer, as we proceed, a few observations, which may not be unuseful, as either preventives or correctives of this the most fatal of all errors, the most lamentable of all human evils.

CAUSES OF ATHEISM.

SECTION I.

"Ad veritatem inveniendam, præcipuum est cavisse, ne voces male intellectæ nobis officiant, quod omnes fere monent philosophi, pauci observant."—BERKLEY DE MOTU.

IT is much to be regretted, and has been just subject of complaint, that the language employed by philosophers, in describing and explaining the phenomena of nature, has contributed not a little to establish the belief of a physical agency, to the exclusion of an intelligent First Cause. To persons, who have devoted little or no attention to the history of Philosophy, and the investigations of Science, it will scarcely appear credible, how powerfully our opinions are influenced by words, and how much these have impeded the progress of the human

mind, in its search after truth. How many errors in religion and philosophy have mere names contributed to introduce, and to propagate from age to age? What endless controversies have they not occasioned? How often have propositions been stated, and doctrines exhibited, with all the pomp and formality of learned argument, which, on strict examination, have been detected to be little else, than an assemblage of unmeaning sounds? The time was, when *sympathies* and *antipathies*, *the intelligible species*, and *the substantial forms* of Aristotle, were offered to explain the whole phenomena of nature. And in later ages, we have had the *entities*, the *quiddities*, the *quoddities*, the *hæcceities*, and all the technical jargon of schoolmen, assuming the name and the authority of science, and involving the human mind in clouds of ignorance. And with this sort of philosophy mixed up, as it occasionally was, with religion, not only was the world satisfied, but even to impugn it was deemed superlative impiety. This darkness has passed away: and Philosophy now pursues

her course in the surer path of experiment and observation. All reasonings *a priori*, in questions of actual existence, are now discarded: facts are the only legitimate objects of appeal; and induction is acknowledged to be the only basis, on which any sound and rational theory can be established.

Names, however, still retain an undue dominion over our judgements, in every department of philosophy; and, while we are unconscious of their influence, betray us into errors, which seem to us possessing all the evidence of standard and incontestable truths. And however problematical the assertion may appear, it is a fact, that we frequently adopt and employ names, when they are sanctioned by high authority, without any correct notion of the meaning of the sign, and often without inquiring into the existence of the thing signified. This position it would be easy, were it necessary, to illustrate by a variety of examples. By reason also of the inadequacy of language to express by appropriate terms the various modifications of thought and feeling, of which the mind is

susceptible, all languages being adapted principally to the purposes of common life, and the expression chiefly of physical objects, we are reduced to the necessity of transferring, by some fancied analogy, the names of things material to things intellectual; while, on the contrary, we are prone, without the same necessity, to assign to physical existents attributes and names, peculiar to objects moral and intellectual. This alienation of terms from their proper signification, though in a great degree unavoidable, has proved a most fruitful source of misconception and error. And as the historian sometimes transgresses the strict limits of his province by assigning names to facts, expressive of his own political views, often imparting to them a colour, which exists only in his own conception of their character, so the philosopher, in detailing the phenomena of nature, is apt to designate them by names, signifying his hypothesis, or his conjecture of the cause.

In proposing a new theory in any department of philosophy, it has been a usual practice, though not always expedient, to transfer to the new hypothesis terms strictly

applicable to other phenomena. We see, for example, a man drag a weight to him by a rope, and we might, though with an idle affectation of scientific language, but technically, and in the strict sense of the term say, that the effect was produced by attraction. We perceive a piece of iron come in contact with a magnet, and we say, that this also takes place by attraction. The effects are similar; but the modes are wholly unlike, and the term is not strictly applicable to the latter of the two cases. We proceed further. There is no obvious resemblance between the attraction of the magnet and iron and the phenomenon of an acid dissolving a metal; yet we transfer the term attraction from the one to the other, and say, that the solution was effected by chemical attraction. We do not even stop here; but in the use of figurative language, founded in some conceived analogy, we proceed farther, assigning even volition and choice to physical substances. We mix an alkali with the solution of the metal, and the latter being precipitated, we say, the acid *prefers* the alkali, as if it were an intelligent being, capable of choice.

In investigating, therefore, physical principles, it is superlatively necessary that we look at facts, and guard our judgements against those errors, into which mere signs have a tendency to betray us.

When Newton established the theory, which has immortalized his name, the tendency of masses of matter to one another he denominated Attraction. Now, by this term, more is signified than the simple fact implies. To the idea of *attraction* or *drawing towards*, we necessarily annex that of a *vinculum*, or bond, or some connecting medium between the two objects, by means of which the one is made to approach to the other. A *pulling* or *drawing*, with no hold, seems an absurdity. The term appears to be inappositely chosen, conveying an idea, not warranted by the simple fact of mutual tendency. The term Gravitation, which also he employed, expressing merely the general phenomenon, is more appropriate to the subject, and leads to no misconception.

Newton, and some of his interpreters, particularly Clarke and Maupertius, were at pains to disclaim the notion, that At-

traction is an active, innate, and underived property of matter, maintaining, that it implies merely the tendency of one body to another. Yet the term naturally conveys the idea of active power; and when this notion of active power, as belonging to matter, is once established, the next step is to represent the power, as inherently and independently an attribute of its being, and to resolve many phenomena of the universe into its sole and effective agency *.

* The philosophy of Newton has been severely censured by several writers, as favouring the hypothesis of the Atheist. "It not only", says an anonymous author, "excites sceptical notions in the human mind; but it gives properties to matter, which lie at the foundation of all the Atheistical systems, whether ancient or modern." The learned author of "Ancient Metaphysics" also complains of this philosophy, as superseding the agency of an Eternal and Immaterial Being. A Sceptic, too, of no ordinary intellect, has asserted, "that, unless we have one law for the Theist, and another for the Philosopher, every one, who adopts at once the philosophy of Newton and the doctrine of Theism, must involve himself in perplexity and contradiction."—*Academical Questions.* That this illustrious philosopher was a Theist, and believed that the universe, in all its varied forms, was the creation of an Omnipotent Power, is an unquestionable fact. Proximate causes only were the objects of his investigation,

With Attraction is associated the adverse power of Repulsion, by which masses of matter are made to recede one from another, or their particles prevented from coming into contact; as also Cohesion, by which they are exhibited to our senses in a solid form. These powers are next followed with a variety of others: and we hear of the powers of oxydation, crystallization, vegetation, assimilation, nutrition, absorption, animalization, as properties of matter, and inseparable from its nature.

Matter being thus hypothetically invested with certain active properties, and these being in the next place presumed to be inherent in it, imagination then sets these powers to work, and to their sole agency has been attributed the production of the universe, and the continuation of its forms. Accordingly, we have been presented with one hypothesis after another, as wild and

and the admission of these precludes not the agency of a Supreme Intelligence. It is to be regretted, if the language of his philosophy can by any possible construction justify the belief, that matter possesses any active principles underived and independent. To the truth of his theory such hypothesis is unnecessary. This will be a subject of future discussion.

extravagant as fancy could devise, to account for the formation of organized beings, without the intervention of an intelligent Author. And, while the Atheist fancies, that he knows the causes, and comprehends the economy of the universe, and talks fluently of the powers of gravitation, repulsion, evaporation, organization, and so forth, he seems not to be aware, that he is amusing himself with mere terms —that these express no causes, but are the names of general phenomena, and give us just as much information, respecting the origin or cause of the universe, and its organized forms, as if we were to ascribe the construction of a watch to a power of *chronometrification*. "There is nothing," observes a French writer (Malebranche), "which Aristotle cannot at once propose and resolve by his fine words, *genus*, *species*, *act*, *power*, *nature*, *form*, *faculties*, *qualities*, *causa per se*, *causa per accidens*." To assign a name to a fact is not to explain its cause; and it is of supreme importance, that it be distinctly understood, that the phenomena which we refer to gravitation, magnetic and electric attraction, cohesion, vege-

tation, animalization, and so forth, are mere generic associations of our perceptions or ideas, and that the names account for nothing. The reduction of any single phenomenon to a general class, is very different from the evolution of its cause; and the manner of its production is to be carefully distinguished from the principle of its production. The *modus operandi*, as it is technically termed, is too frequently confounded, as one and the same thing with the *principium operandi*. The former may be ascertained by observation or experiment; the latter cannot possibly be an object of perception.

Power, as a sign, is an abstract term; as a cause of change, it is not accessible to sense; it is nowhere visible or tangible. We perceive only what we consider to be its effects. Whence our notion of power originates, or whether it be not strictly the attribute of a voluntary agent, it is beside our present purpose to inquire. The subject will afterwards engage our attention. We shall here only remark, that to ascribe inherent powers to matter, as independently its own, and to resolve the

phenomena of nature into their sole agency, is Atheism. And, when the language of the philosopher, in the investigation of proximate causes, beyond which his province does not extend, is either so far unguarded as to countenance, or so far misunderstood, as to be conceived suggesting, the notion, that matter has powers, and these underived, to which the phenomena of the universe may be referred as effects, it naturally leads to this baleful hypothesis. It is the business of the philosopher to trace the order of phenomena, to generalize the various changes with the modes of their production; but the secret power, by which the changes are effected, eludes his research. He perceives antecedents and consequents, but nothing more. Power must reside somewhere; but, as it is not an object of perception, in inquiring to whom, or to what, it belongs, reason or reflection, and not external sense, must direct our judgements. When the philosopher, then, employs language, which would seem to invest matter with *powers* as essentially its own, how convenient soever it may be to employ the term *power*, he assumes a hy-

pothesis without sufficient evidence,—a hypothesis, which has a direct tendency to exclude the notion of an Intelligent Supreme Cause.

The term *Nature*, also, in which the sceptic delights, as possessing some magical influence, and which is used so vaguely as to mean something or nothing, has contributed not a little to shut out the notion of Deity. Nature is represented as the universal agent; and her laws are said to regulate the phenomena of the universe. Does the planet roll in a curvilinear orbit? It is by a law of nature. Does the shrub vegetate, or the cedar grow? It is by the energy of nature. Does the animal generate? It is prompted by nature. Does the young draw sustenance from its mother? It is taught by nature. Thus is nature exhibited as the efficient cause of whatever is, while the Almighty Parent and Preserver of all being is excluded from his works. Now, we ask, what is meant by nature? If it be a real being, possessed of intelligence and power, then the term must be understood to express the Author of nature; and its occasional em-

ployment in this sense, or to denote secondary causes of His appointment, serves to prevent the irreverence, which would accompany the too frequent and familiar use of the appropriate name of the Supreme Being. If it mean the order of events, or certain principles of action inherent in matter, and independently its own, it implies a hypothesis for which we have no sufficient evidence, and which it shall be our endeavour to shew, is at once gratuitous and false. "What," says Dr. Hutton, "could be more unworthy of a philosopher, than not to know, that nature is only a creature of his own fancy, and no existing thing!"* It is, notwithstanding, to be apprehended, that the constant ascription of phenomena to the agency of nature, has a necessary tendency to lead inconsiderate minds into error, and to beget a vague notion of some secret principle, or power, essentially inherent in matter, by which it produces every change, both in ourselves, and in the world around us.

* Investigation of the Principles of Knowledge, Part II. Sect. 11.

SECTION II.

A SECOND cause of Atheism is the habit of confining the attention to such views and speculations, as have a necessary tendency to generate and confirm a sceptical disposition. We know by experience, that a physical cause, by continued or repeated operation, often produces an effect, to which a single application of its power, would be wholly inadequate. A similar result obtains in the moral and intellectual world. We find, that a motive, though too feeble, when first presented to the mind, to move us to action, yet by frequent recurrence acquires additional strength, and often ultimately impels us, with almost irresistible force, to yield to its power. In like manner, an argument, when first addressed to the understanding, may possibly make little or no impression; yet by repeated exhibition, and the attention being allowed to dwell upon it, to the exclusion

of all counteracting influence, it frequently avails to produce conviction. Absent motives, and absent evidence, must necessarily be inoperative. An immediate good, or the present argument, frequently supplants the authority of higher motives, or the cogency of more solid reasoning. Certain it is, that it is not always the intrinsically strongest motive, or the most correct view of existing circumstances, by which the will is governed; nor is it uniformly the most rational argument, by which conviction is produced. We know also, that such is the constitution of our nature, that we cannot asssociate long with others, without contracting a similarity of sentiment and manners. Their modes of thinking, speaking, and acting steal upon us imperceptibly, and gradually become our own.

Now, it is evident, that to have our minds continually occupied in perusing the speculations of sceptical writers, is in fact to live in communion with them, and to become, as it were, members of their society. This intercourse it is impossible to maintain for any considerable time, without imbibing a portion of their spirit.

There is a sympathy in sentiment, as well as in feeling; and we are almost irresistibly inclined to adopt the views, and embrace the opinions of those, with whom we associate, and with whom we are in habits of constant communication. It requires no ordinary vigor of mind to oppose the influence, which a continual exhibition of the same views, the same motives, and the same arguments naturally possesses. We yield, not because the motive is the most forcible, or the argument the most powerful, but because they are continually before us, soliciting our attention. How many thousands have been seduced into error by this single cause? How many have become sceptics, by dwelling on the metaphysical subtleties of Spinoza and of Hume, or on the visionary cosmogonies of some French encyclopedists? They read and fancy, until their understandings are bewildered, and in imagination they dream that to be possible, which, in sober reason, they ridiculed, as the reveries of an insane philosophy.

Gifted perhaps by nature with minds capable of investigating the truth, but having the subject invariably presented to

them in one and the same light, and their judgement being under the constant influence of the same arguments, certain mental impressions are made, certain trains of thought established, and, in the absence of opponent evidence, such confidence in the justness of their opinions is created, that they perceive no necessity, and feel no desire, to institute farther inquiry into the subject. Their belief indeed is founded in argument; but it should be remembered, that it is not argument simply, but its preponderance in the balance, after due deliberation, which constitutes the ground of rational conviction. For, as it is by the combination of contrarieties, that the economy of physical nature is maintained, so it is by the collision of conflicting evidence, that truth is to be elicited, and rational belief established. If we are desirous therefore to avoid error, and to arrive at truth, we must be careful to survey every subject of discussion, not only in the light, in which one author, or one party, presents it to our examination, but in that also, in which their opponents propose it to be viewed. Every man has reason to suspect

the justness of his conclusions, who confines his attention exclusively to the evidence, which is favourable to only one side of a question; and he is equally a bigot in philosophy, as in religion, who is obstinately wedded to a doctrine, which he has only partially examined. The Atheist may arrogate to himself the merit of superiority to vulgar prejudice; but his claim to this distinction is more than questionable, if his infidelity has no other foundation, than an undivided attention to the reasoning of its advocates, and is not the result of fair discussion, fact being opposed to fact, and argument to argument. If it be necessary to disengage our understandings from the prejudices of education, which, by presenting to us objects of speculation invariably in the same light, exclude those views, which would enable us to rectify our judgements, and correct our errors; it is equally requisite on the other hand, when we have shaken off the dominion of these, to beware, lest we become the dupes of others not less injurious, maintaining opinions founded in partial evidence, and partial inquiry. We should ever bear in mind,

that, if there are *vulgar* prejudices, there are also *fashionable* errors; and that, if the ignorant are slaves of the former, the well-educated are too often under the dominion of the latter. We should also bear in mind, that in our search after truth no error is more fatal, than the propensity, which some minds have, when they find a doctrine encumbered with inexplicable difficulty, to rush precipitately into the contrary hypothesis, without previously inquiring, whether it be not embarrassed with difficulties equally insurmountable. To judge without examination is to judge in prejudice; and he only has duly examined, who has viewed the subject in its various lights, and duly weighed the conflicting evidence.

In connection with the second cause of Atheism, I shall here specify another, without reducing it under a distinct head, namely, the natural tendency of scepticism to multiply its own doubts.

Credulity is one of the characteristics of youth; incredulity is attached to age. Both are extremes, against which it is wisdom equally to guard. To refuse our assent to a proposition, supported by a

preponderance of appropriate evidence, because its truth is not demonstrable, or intuitively certain, is equally irrational, as to believe without evidence, or, disregarding reason, to bow to mere authority.

A sceptical state of mind is sometimes induced by a principle in itself highly prudent and commendable, namely, an earnest desire to avoid precipitate opinions, from a fear of heedlessly running into error. Wise, however, and praiseworthy as this principle is, and conducive, as it must be allowed to be, under due regulation, to correctness of thought, and the advancement of truth, it has a natural tendency, in certain mental constitutions, to beget that extreme caution, which precludes the formation of determinate judgements, and keeps the mind in a state of perpetual vacillation and uncertainty. Wherever clearness of discernment, vigor of intellect, with a firm confidence in the truth of certain first principles, are wanting, this wavering and indecision—this disposition to suspense and oscillation between conflicting opinions, is always to be apprehended. The transition, in such cases, from doubt to disbelief

is easy. Scepticism is almost necessarily progressive. It steals upon us by gradual, and hardly perceptible, steps. No man ever became at once a thorough-paced infidel; but one doubt begets another. Every department of science consists of truths so interwoven or linked together, that, when our belief in one is shaken, others by necessary consequence become questionable. It is also certain, that, when we detect the falsity, or perceive the absurdity, of opinions, which we once held with the most unsuspicious confidence, we naturally feel some doubt of the accuracy of others, though not intimately connected with them; and a suspicion is apt to arise, that some tenets of our present belief, to which we now yield the firmest assent, might, if examined with more rigid attention, be found to be alike false, or perhaps equally absurd. And when such a suspicion is created, and a disposition to scepticism has once invaded the mind, it requires more energy of intellect, than many can command, to check its progress, and prevent it from stealing away our convictions, one after another, until almost nothing is left to be firmly believed.

Let a person, given to metaphysical speculation, be persuaded to question, whether images or ideas only, and not things themselves, are the immediate objects of perception, and he will necessarily be led to doubt, whether he should believe, without proof, the existence of an external world, and whether all around him be not a mere illusion. Or if scepticism should so far becloud his understanding, and unsettle his convictions, that it becomes with him a question, whether he ought to assent to any proposition, which he cannot demonstrate; then, like an edifice, shaken from its base, his whole system of belief, whatever it may be, suffers an immediate and entire subversion. Thus, unless certain first principles are firmly established in our minds, to which in all cases we may confidently appeal, and we bear constantly in our recollection, that there are, and must be, certain primary truths, which can have no other evidence, than their intuitive certainty; unless also, in every question, we rest satisfied with that evidence, which the subject admits, we may proceed from one doubt to another, and from doubt to disbelief, until

every intellectual principle is unfixed, and all within us and around us seems obscurity, perplexity, and confusion.

It is to be observed also, that when a disposition to scepticism has unhappily seized the mind, it is unavoidably strengthened by a review of the various revolutions, which the history of philosophical theories exhibits. Amidst such a multiplicity of contradictory opinions, each in succession rising into repute, then sinking into obscurity, a suspicion is excited, that all is nothing, but doubt and conjecture. And when we examine the contentions and logomachies of schoolmen and metaphysicians especially, it needs create no surprise, that, amidst such perplexity and contradiction, the whole should be derided as only specious sophistry, and a source of endless wrangling and error.

It would not be difficult to illustrate the progress of scepticism in the human mind, by a variety of examples, and to prove by the evidence of facts, how easy it is to proceed from doubt to doubt, until nothing is firmly believed, but what is an object of

scientific demonstration. Hume felt himself so bewildered in the mazes of scepticism, that perhaps there was scarcely a single truth, to which he steadily assented. Even mathematical certainties he seemed to question. He tells us, that he saw no reason, why two mathematical lines might not intersect each other in more than one point, because two such lines having never been made, the theory could not be proved by experience; nor why two lines, approaching at the rate of one inch in twenty leagues, might not at their concurrence be considered as one*. He denies also, that we have any precise idea of equality and inequality, shorter and longer. *Treatise of Human Nature*, Book i. Sect. 4.

It is true, as Gibbon remarks, that curiosity and doubt are the parents of knowledge; but it is equally true, as an eminent metaphysician† has observed, that

* We refer the reader to our quotation (Introduction, p. xx.), in which Mr. Hume describes the state of his own mind, when he wrote his Treatise on Human Nature.

† See "Hutton's Investigation of the Principles of Knowledge."

the most important lesson, which man has to learn is, to know, when to believe, when to disbelieve, and when to doubt.

There is one remark more, which, under this division of the subject, we would take this opportunity of offering. Precipitate judgements are carefully to be avoided; and the mind should always be left accessible to argument, and open to conviction. Every candid inquirer after truth must be sensible, that he has often been compelled, by the force of evidence, to change opinions, which he once zealously and honestly maintained. Let it not then be imagined, that, by the subsequent observation, we mean to dissuade from the reconsideration of those arguments, which form the ground of our present judgements, or from the examination of any new objections, by which these judgements may be opposed. This would be to close the understanding against the correction of error, and the introduction of truth. But we must observe, at the same time, that the habit of constantly debating with ourselves a question, on which, after deliberate inquiry, and patient attention to evidence,

we have formed a decided opinion, has a natural tendency to unsettle our conviction, and shake our faith in the clearest moral and religious truths. The very habit of repeatedly referring to the arguments, by which our judgement is supported, has a natural tendency to beget a doubt, whether our opinion does not yet require confirmation, and whether the question be conclusively and satisfactorily determined; while the contrary arguments, again and again assailing us, are calculated, by reiterated impressions, to weaken our conviction, and make the mind oscillate between the two opinions. Judgements should be deliberately formed, and steadily maintained, subject however to revision, as new evidence may, by reading, conversation, or occasional reflection, present itself. But, if the mind of the author be not peculiarly constituted, experience justifies him in stating, that the continued habit of debating a subject with ourselves, and of re-examining the same arguments and objections, after our opinion has been once deliberately fixed, has a necessary tendency to create doubt, perplexity and vacillation.

We should weigh carefully the evidence on each side of every question, before we come to a decision; but this decision should not be disturbed, unless new arguments should be offered, opposed to our judgements, and requiring our examination. It may be useful also to bear in memory, the important fact, that, if common minds tenaciously retain, in repugnance to evidence, the prejudices of early education, an acute judgement, almost constantly occupied in abstract discussions, and speculative inquiries, is apt to be perplexed by its own ingenuity, and duped by its own subtlety*. Hence it is disposed to

* It is recorded of the celebrated Chillingworth, that though an admirable proficient in the art of reasoning, he had "contracted such an irresolution, and habit of doubting, that by degrees he grew confident of nothing." It is said, "that neither the books of his adversaries, nor any of their persons, though he was acquainted with the best of both, had ever made great impression upon him; all his doubts grew out of himself, when he assisted his scruples with all the strength of his own reason, and was then too hard for himself." Lord Clarendon adds, that, by a new appeal to his own judgment, he was enabled to recover from this state of doubt, and that he was, "in all his sallies and retreats, his own convert."

doubt plain and simple truths, which, in understandings not perverted by metaphysical refinements, no sophistry can darken, and their belief of which no casuistry can weaken. Hence also, if common minds err, in believing too much, the metaphysician is very prone to err, in believing too little.

SECTION III.

"The world suffers so much by men's taking on them to know more than they do, that I fear it in myself, as one of the worst diseases of mankind."—BAXTER ON THE NATURE OF SPIRITS.

A THIRD cause of Atheism is an overweening conceit in our own wisdom, arising from a presumptuous confidence in the capacities of the human mind, and the extent of human knowledge. We are always ready to confess, and none more prompt than the sceptic, that the knowledge attainable by man is extremely limited; and yet such is our inconsistency, that we venture to dogmatise, as if the whole universe were open to our examination, and all possible intelligence centered in us. Now, as

conceit in human wisdom is necessarily attended with extravagant notions of the extent of human knowledge, so it is uniformly accompanied with narrow views, precipitate judgements, and dogmatic conclusions. It is this spirit of conceit and arrogance, which presumes to constitute our conceptions the standards of possibility, and man the measure of all things*. It is this spirit, which has dared to assert, that what our little experience does not attest, or our narrow understandings cannot comprehend, can have no existence. To affirm, that no being, unless himself material, can create matter—that he cannot even conceive matter—that no substance can produce a substance—that not an atom more can possibly exist than now exists—that an incorporeal substance is an absurdity, that mind cannot exist without body—that it is merely a modification of matter, and that the laws of nature, as here exhibited, are the laws of universal being, are dogmas, which no man, who has ever examined

* The latter of these propositions was a leading maxim of some ancient philosophers, and, though not in express terms, has been adopted by our modern atheists.

his own faculties with unprejudiced attention, or opened his eyes to the immensity of the universe, will venture to assert. How contemptible is the vanity, which presumes man to be at the head of the intellectual creation! That nothing more is to be known, than he is capable of learning on this spot of earth!

It is the same spirit of conceit and arrogance, which prompts many to condemn, whatever accords not with their notions of right and wrong, and hence to reject the doctrine of a Supreme Being. We behold around us much good, amidst a certain portion of evil. We perceive, amidst general order and regularity, some phenomena, which present the appearance of accident, or contingency. Because the Atheist cannot reconcile this evil and these seeming accidents with his notions of a wise and good Author, he denies the existence of a First Cause. Though placed here in a mere speck of creation, and though knowing little or nothing beyond the limits of his own narrow sphere, he presumes to erect his own judgment into a standard of right and wrong, and denies

the existence of a Deity, because the economy of this planet is not so constituted, as he, in his little wisdom, conceives, that it should have been. It unfortunately happens too, that, while some minds have the gratifying propensity to direct their views, where the scene is mixed, to those objects, which cheer and enliven, others are unhappily prone to fix their whole attention on what are gloomy and depressive. And, when the mind has acquired this melancholy habit, where the religious principle has not been firmly established, dissatisfaction with the condition of human life is the natural consequence, accompanied with the persuasion, which conceit and presumption never fail to strengthen, that such a state of things cannot be rationally ascribed to a wise, good, and almighty Being as the cause.

Now, if the whole universe were open to our examination,—if we were capable of comprehending it in all its parts and their various relations—if we observed nothing around us, or were conscious of nothing in our own constitution, impressing the conviction, that there must be a power and

an intelligence greater than ours, we might then perhaps dogmatise with justifiable confidence, and constitute ourselves judges of right and wrong, in the administration of the universe. But our terrestrial sphere is a mere point in creation. If we know something of the physical, we know nothing of other relations, which it may bear to the whole. It is not for us, therefore, to erect our reason and our experience into a standard of right and wrong. Shall we be so bold as to affirm, that there is no wisdom, which does not accord with our wisdom, no benevolence, but what conforms to our rule, no power superior to ours, because evil and apparent accident are not excluded from the system? To those, whose intellectual vision is unhappily so darkened, that they discern no evidences of goodness, intelligence, and power in the economy of nature, the argument, which we now urge, we are aware, is addressed in vain. But, if there are any, who perceive and acknowlege these evidences, but feel their faith shaken by presumed defects and imperfections, and by the commixture of good and evil, which our system

exhibits, they should bear in mind, that it would be as absurd to believe, that time may comprise eternity, or distance include infinite space, as to hope, that the capacities of a finite being can comprehend the counsels of infinite wisdom. They should ask themselves this question, Whence is derived that intelligence by which they are enabled to detect these presumed imperfections? Are they endowed with a higher degree of wisdom, than the Fountain of all knowledge? Or, are they capable of detecting what the eye of Omniscience is unable to discern?—Is the Great Parent of nature inferior to his own creation? Is He in ignorance, or man in error?—What relation this world of ours may bear to others, we know not. It is physically connected with some; may it not have also a moral connection? We are as incompetent to judge of the universal system, as the ant, were it capable of thought, to form an estimate of our globe from its little hillock. To judge of the whole from the inspection of a part, is to decide in blindness, and, very generally therefore, to judge in error.

The best corrective of conceit is to

become acquainted with ourselves. No man, who has taken the trouble to examine the capacities of the human mind, to measure the extent of its powers, to consider how little he can penetrate into the secrets of nature, even in that little world, in which he exists, how insignificant is the spot, on which he lives in the immensity of creation, and how liable he is to error in all his speculations—there is no man, who reflects seriously on these things, but must retire from the contemplation, humbled under the conviction, that his experience of modes of existence, and laws of being, is extremely limited, and that, seeing little, and understanding still less, conceit, arrogance, and presumption are unbecoming his character.

If, from a survey of the works of nature, we rise with a full persuasion, that power, wisdom, and goodness must have been employed in their production, this conviction surely ought not to be abandoned, because man is not more than man, capable of exploring the whole economy of creation, or because every thing in this system of ours is not so constituted, as he, in his self-suf-

ficient wisdom would presumptuously prescribe.

"In pride, in reasoning pride our error lies;
All quit their sphere, and rush into the skies."

SECTION IV.

"Desinunt enim suum judicium adhibere; id habent ratum, quod ab eo, quem probant, judicatum vident."—Cic.

A FOURTH cause of Atheism is an excessive and irrational deference to the judgement of others. No source of error can perhaps be named, so extensive in its influence, or so fatal in its effects, as a principle of implicit faith, by which we submit our reason to foreign authority. Nor is it perhaps extravagant to affirm, that the opinions of mankind generally, if investigated to their source, would be found to originate in this principle. To think for themselves, is a task which few indeed have the capacity and the inclination to undertake.

It is natural to presume, that time and talents, long and patiently devoted to any subject in art or science, will ensure a correct and extensive acquaintance with it; and to those, versant in any department of human knowledge, we spontaneously defer in matters of difficulty. Where our own knowledge and experience fail, it is wisdom to rely on the judgement of those, to whom the subject is familiar: but beyond this, to submit our understandings to the direction of others, is a procedure as dangerous, as it is irrational and degrading. It was an implicit faith in great names, that held the human mind in bondage, for a long series of ages. Aristotle gave law in every department of philosophy for two thousand years, and men bowed to his authority with the most servile submission. In questions of religion especially, the influence of some eminent philosophers in ancient times, and of popes and priests in later ages, had, previously to the Reformation, paralysed the energies of the human mind, and held it captive in the fetters of a slavish superstition. From this mental degradation, mankind are now, in every

enlightened nation, rapidly recovering. To emancipate themselves from error, and abjection of mind, is the first step towards the discovery of truth, and advancement in virtue and religious knowledge. Still, however, we have to lament the prevalence of implicit faith, and its debasing effects. The creed of the multitude is still ruled by authority. Nor is it unusual to hear certain sects and individuals reproach others with this very fault, while they are themselves unconsciously chargeable with it, in all its enormity. The Protestant derides the Papist for the absurd belief, that any man is infallible; but does he never create a pope of his own, to whose judgement he bows with submissive respect? The sceptic sneers at the blind servility of both; while his own creed, if he believes anything, may be nothing else, than equally blind devotion to an idol of his own creation. Compared with the few, who think for themselves on almost any subject, whether of literature, of religion, or of philosophy, how many thousands are there, who yield a ready assent to the dogmas, which their teachers, or others to whom they sur-

render their judgements, are pleased to prescribe. Against a slavish submission to the authority of priests, none is disposed more loudly to declaim, than the Atheist or the sceptic. There is reason, however, to believe, that implicit faith is a principle not confined to the religionist, nor the peculiar character of his creed. Of those who have espoused the hypothesis of Atheism, there have been some, perhaps we might say many, whose doubts of Theism have been excited,-if not strengthened and confirmed, not by their own reflection, not by argument, but by the authority of some celebrated names, to which they have looked up with sentiments of deference and respect. There are few minds so constituted, as to be wholly inaccessible to the influence of mere opinion, expressed by those, whose talents they admire, even in matters, in which they are fully qualified to decide for themselves. As there are some material substances, not easily susceptible of passion from other substances, so there is in some minds a degree of firmness and solidity, not to be shaken by any foreign authority. In others, on the con-

trary, we observe a feebleness, and flexibility, ever ready to yield to the influence of every impression, and particularly inclined to bend to any opinion, which may be delivered in a tone of confidence, or recommended by a great name. And even in minds of a firmer texture, when conviction is not established on a solid basis, there is felt some disposition to doubt and hesitation, when their judgements are opposed by men of transcendent talents, and distinguished fame. In such cases we are prone to suspect, that the doctrines of these men are not so irrational, nor ours so unquestionable, as we have been led to imagine.

It is deeply to be lamented, that some physiologists, and mathematicians, with a few, who have been eminent for metaphysical science, have professed the hypothesis of Atheism; and it may excite some surprise, that those very men, who have developed to others the wonders of nature, should not themselves discover and acknowledge the hand of a wise, powerful, and benevolent Author. It is matter of astonishment, that, while they have inves-

tigated proximate causes, with a degree of talent and industry, which commands admiration, they should have denied the existence of a Supreme Intelligent First Cause. It is equally to be regretted, that their opinions, coming recommended by all the authority, which high reputation can confer, have infused doubts into minds, where they had no previous existence; and that many have implicitly adopted their hypothesis, seduced not so much by argument, as the childish presumption, that they could scarcely err in assenting to doctrines, propounded by men of such preeminent talents. If we perceive some persons adhering to the prejudices imbibed from education with obstinate pertinacity, we may remark others, hastily and irrationally abandoning the creed of their earlier years. Those, who have possessed few or no opportunities of inquiry, and have, without the slightest suspicion of their truth, retained the opinions, which they were taught in youth, are but little subject to the immediate influence of an authority, which militates against doctrines, early inculcated. To controvert what they

conceive to be an established truth, in matters of religious faith, serves rather to shock their feelings, than to alter their judgement. But those, on the other hand, whom posterior examination has induced to renounce some of their early, and once strong, convictions, and who have remarked the changes, which have taken place, not only in their own minds, but in the religious and philosophical world at large, are easily led, in the absence of a sound and firm judgement, to question the certainty of other opinions, which they have hitherto believed, and which, possibly, even yet they perceive no reason finally to reject. But scepticism, as has been remarked, is in its nature progressive; nor, perhaps, are any doubts so difficult to be removed, as those, which are founded in mere deference to great names. A real disease may admit an easy cure; but imaginary distempers generally baffle the efforts both of medicine, and philosophy. Where reason may be addressed, error may be corrected; but, where authority, not argument, is the ground of our doubt, or disbelief, reason generally is addressed

in vain. The principle must be expelled, or correction is hopeless. If we desire to arrive at truth, or rational conviction, we must first learn to think and judge for ourselves.

But, if the authority of great names is to have any weight, in influencing our opinions on this superlatively important subject, why is implicit deference to be paid to those, who have maintained the one hypothesis, while the judgements of others, who, with equally distinguished talents, have supported the contrary doctrine, are dismissed, as of no value? Shall we prefer Epicurus to Plato, Democritus to Aristotle, Spinoza to Bacon? Shall we deem Newton and Locke less worthy of our respect and confidence, than La Place, or Diderot? If our opinions are to be governed or influenced by mere names, admitting that the individual talents on each side are equal, which is a large concession, is it not unquestionably safer to confide in the majority, following, if I may be allowed to say, constellations of genius,—men pre-eminent in knowledge, and distinguished by moral worth,—rather

than the lights of a few, confessedly not of superior intellect, or higher attainments, and in point of numbers comparatively insignificant? But let us view the subject in another light.

To respect the opinions of others on any question of art or science, to which they have devoted long and patient attention is, it must be acknowledged, prudent and rational. We submit with deference to the advice of the physician, the counsel of the jurisconsult, and the experience of the pilot; but, in questions equally familiar to them, and to us, we exercise our own judgement. The mathematician, the chemist, and the physiologist are in like manner entitled to our respect, when delivering opinions on subjects comprehended in their respective provinces; but it needs hardly to be remarked, that a proficiency in one department of science by no means implies a knowledge of all. A profound mathematician may be little conversant in the science of metaphysics, nor is the physiological experimentalist, occupied in facts and details, necessarily a sound philosophical reasoner, or qualified to deduce, even

in the sphere of his own immediate department, correct general conclusions. How often do we find high classical attainments, much metaphysical acumen, and even philosophical science, associated with a slender portion of what is termed common sense, or sound judgement, improved by experience? It is with the mind, as with the eye. Each discerns those objects most quickly and most correctly, with which it is most familiar. Some minds excel in details, others in forming general principles; some are distinguished by acuteness, others by solidity; some have narrow, but distinct perceptions, others wide and comprehensive views—some learn intuitively, what others acquire by investigation. And so powerful is the influence, which mental constitution partly, but early culture, professional habits, literary pursuits, and social intercourse especially, exert over our intellectual perceptions, that the same evidence, which to one mind is satisfactory and conclusive, makes little or no impression on another. In judging, therefore, of the truth or falsity of any proposition, we cannot be too care-

ful in guarding against that influence, which any peculiarities in our modes of thinking, or habits of life, insensibly create.

Now, though the mathematician may be expert in investigating the relations of number and quantity, the anatomist in explaining the position, the structure, and the functions of the various parts of the human frame, and the proficient in physical science generally, in developing proximate causes, and ascertaining the laws, by which the processes of visible nature are conducted, it is far from following, as a necessary consequence, that they are masters of the philosophy of mind, that they have attentively studied the nature of evidence, and made themselves acquainted with the principles, which constitute the foundation of all rational belief. Much less does it follow, that in matters of common life, where experience is our chief guide, or in questions of common sense*, they are more com-

* What are the primary truths founded, in what has been termed common sense, or what is their number, may be a subject of controversy; but that there are truths, which all men, idiots excepted, believe, there can be no doubt. Whether our belief in these truths is to be refer-

petent to judge, than others of equally sound understanding.

Were we to form our opinion of the mode, by which we arrive at the knowledge of the Divine existence, from the abstruse and perplexing arguments, which some authors have employed to prove the fact, we should naturally infer, that of all questions this is one of the most difficult. But happy it is for mankind, and wretched would be their condition were it otherwise, that the evidence for the being of a God, is accessible and open to all men, endowed with common understanding. His existence and attributes "are clearly seen from the things, that are made." The philosopher, by his researches into the works of nature, may know more, and have more to admire, in the phenomena of the universe, than the humble rustic; still the latter sees and knows enough to teach him, that there must exist a Supreme and Intelligent Cause. He observes the effects of ingenuity and design in the productions of

red to a distinct principle of common sense, or that degree of reason, which is common to all men, is of little moment. It is a law of our nature, that we believe them.

man; and his understanding must be sophisticated by metaphysical subtleties, before he can be persuaded, if the house in which he dwells, had a beginning, and was constructed by human skill, that the world, in which he lives, was eternal or accidental. He may be incapable of tracing, like the physiologist, the complicated means, by which the organ of vision makes him sensible of external objects; but he perceives, as clearly as he, the utility of the eye, and the purposes which it serves; and if he knew more of its structure, his admiration of its Maker would be proportionally enhanced. And, though the physiologist may be able to trace sensation from the solar ray, through the various intermediate changes and affections to the affection of the brain, he knows as little of the ultimate cause of perception, as the rustic himself. Here they are equally involved in ignorance. The one may connect the antecedent A immediately with D, and the other, discerning intervening links, may connect A with B, B with C, and C with D, but of the bond of conjunction between the last pair, or how the one follows the

other, he and his humbler fellow are equally ignorant. But the simple question between them, if the physiologist makes it a question, is this, "Was the eye made for seeing? Does it display evidence of intelligence or design?" And this question the untutored peasant, if he reflects, is as capable of deciding, as the mathematician, or the philosopher. Its solution requires no metaphysical acumen,—it involves no abstract or mathematical investigation, nor does it depend on a knowledge of the structure of the organ, or of proximate causes, though this materially contributes to the demonstration of design. To submit our judgements then, in a plain and simple question like this, to the direction of any man, whatever may be his proficiency in art or science, or to suffer our opinion to be influenced by his authority, is as absurd, as to consult him, whether we see or hear. Let us bow, if we will, to Cuvier as a physiologist, to La Place as an astronomer, and to Spinoza as a metaphysician; but in inquiring whether the eye or the ear be useful, or whether they manifest design, we need no science to direct our judge-

ments, though this may illustrate the excellence, and excite our admiration of their Maker. Common understanding may, in this case, confidently decide for itself. To be influenced here by the authority of any man, or to doubt because some have doubted, is a degrading submission to names, where names should have no weight. We may as well go one step farther, and see only what they see, and hear what they hear.

SECTION V.

It has contributed not a little to the growth of infidelity, that while the Atheist on the one hand unreasonably requires, some Theists on the other injudiciously propose, a species of evidence in favour of Deity, of which the subject is utterly unsusceptible. Several theologians and philosophers have attempted to demonstrate the existence of a Supreme Being, by reasoning, as it is termed *a priori*, or by arguments purely metaphysical; and on this evidence solely have they rested the question. So confidently has this mode of argumentation been employed, that it has even been asserted, that no mathematical deduction, or

intuitive truth is accompanied with clearer evidence. Now, the existence of a Supreme Being is not a necessary truth ; it is a question of fact. It cannot be demonstrated, that a Deity must be, or that the contrary proposition involves an absurdity. That something must have existed from eternity, is self-evident; and what this something is, constitutes the question between the Theist and the Atheist. The one asserts the eternity of matter; the other that of an Intelligent First Cause, the Author of all existence. The question of Deity then being a question of fact, and the subjects of metaphysical evidence being the necessary and immutable relations of our ideas, it is clear, that this species of argument is wholly inapplicable to this, as to every question, which relates to actual existence. These metaphysical reasonings therefore have failed to convince. They are not only abstruse and perplexing, but, when strictly examined, will be found inconclusive. Hence they have proved injurious to the doctrine, which they have been offered to establish. With the exception of truths purely mathematical, or, to speak generally, those founded in neces-

sary relation, there are few, if any, whose evidence is not weakened by the adduction of illogical arguments in their favour. If the reasoning is abstract and difficult to be comprehended, the reader is apt to conclude, that the doctrine to be established cannot be very clear, which requires such laborious efforts of intellect to confirm its truth. And, if the effort should be unsuccessful—if the attempt to prove, that the doctrine not only is, but must be true, should fail, when the invalidity of the argument is detected, a suspicion is sometimes created, that the doctrine may be false. Thus much is certain, that our belief in any moral or physical truth is necessarily weakened, by the refutation of an argument, on the authority of which partly the proposition gained our assent. And, if the reasoning, which has been subverted, should be that, on which solely our conviction rested, we are too prone to conclude, from the refutation of the argument, that our opinion is false, or that the doctrine is doubtful.

It is also to be observed, that a fallacious argument has a direct and necessary ten-

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It is also to be observed, that a fallacious argument has a direct and necessary ten-

dency to diminish our confidence in the sagacity of its author, and naturally infuses into the mind some doubt, whether his other reasoning has all the validity, which it seems to have, and which it may really possess. When we perceive one stone, crumbled at the foundation of an edifice, which, on a superficial inspection, had the appearance of soundness, it excites an apprehension, that others also may be in a similar condition; and that, if the structure were examined, it would be proved to be unstable. It is not then too much to affirm, that arguments *a priori* being l e arly inapplicable to every question of actual existence, and when rigidly examined being detected to be fallacious, furnish the Atheist with a ground of exultation, and are injurious to the cause, which they are intended to support. We know, that when the shaft of an enemy misses its aim, his adversary naturally feels a triumph*. It is prudent

* In favour of the opinion here offered respecting not merely the inutility, but also the injurious tendency, of attempting the proof of the Divine existence by metaphysical argument, it would be easy to cite many weighty authorities; but we shall rest satisfied with quoting that of the learned and profound Cudworth. — "These

in every man to abandon a position, which he is unable to defend, and the possession of which serves only to weaken his strength.

If the abstract reasonings of some philosophers and divines have, from their obscurity or invalidity, failed to effect the intended conviction, the metaphysical arguments of some ancient and modern Sceptics are eminently calculated to shake infirm minds, and to confound them with doubts and difficulties. The daring and undisguised attacks on Theism, and the

atomic Atheists", observes the writer, "utterly evacuate that grand argument for a God, taken from the phenomenon of the artificial frame of things, which has been so much insisted on in all ages, and which commonly makes the strongest impression of any other upon the minds of men, they leaving only certain metaphysical arguments for a Deity, which though never so good, yet by reason of their subtlety can do but little execution on the minds of the generality, and even among the learned do oftentimes beget more of doubtful disputation and scepticism than of clear conviction and satisfaction, the Atheists in the mean time laughing in their sleeves, and not a little triumphing to see the cause of Theism betrayed by its professed friends and assertors, and the grand argument for the same totally slurred over, and so their work done, as it were, to their hands for them."—*Intellectual System*, i. 4.

abominable blasphemies, which have disgraced some disciples of the French school, have rather a tendency to outrage the feelings, and wound the heart, than to affect the judgement, or convince the understanding. But the delusive sophistry of some ancient metaphysicians, with the still more insidious subtlety of some modern Sceptics, as Spinoza and Hume, though they fail to make an impression on the philosopher, who rests his faith on the works of nature, or the Christian, who appeals to divine revelation, yet, when addressed to a mind, whose conviction of Deity is not thus stably founded, they have unhappily a tendency to perplex the judgement, to bewilder the reason, to unsettle the mind, and to fill it with sentiments of uncertainty and doubt. "When I read", said a philosophical inquirer, "the abstract arguments in favour of Theism, I retire from the perusal, rather dissatisfied, than convinced. When I examine the metaphysical theorems of Spinoza, I am perplexed and confounded. No sooner do I abandon these speculations, and direct my attention to the construction of my own frame, or to

any of the wonders around me, than I perceive the vanity of these abstruse argumentations, and feel myself irresistibly impressed with the belief of an Almighty and Intelligent Cause." It is in the constitution of nature, that the Deity is revealed. Whether we contemplate the orbs, that roll in the immensity of space, or look at the insect, almost too minute for the eye to discern, we behold his power and wisdom displayed. And we may venture to affirm, that, as no purely abstract reasoning is capable of establishing a matter of fact, so no metaphysical argument, inapplicable, as it must be, to every question of actual existence, can make any impression on the doctrine of Theism.

But, if the question be clearly unsusceptible of this species of reasoning, is it not absurd in the Sceptic to expect, that the existence of Deity is to be demonstrated by the same evidence, by which we evince the equality of the angles of a plain triangle to two right angles? Is it consistent with reason to reject the doctrine of Theism, because not established by a species of evidence, which the nature of the subject

necessarily excludes? He should bear in mind, that, in all the transactions of common life, his conduct is regulated by the principles of moral certainty. He would without hesitation pronounce the man to be either a fool or a lunatic, who should stand stock still, and make no provision for the morrow, until it were *demonstrated*, that the sun must rise again, and that he shall live to see another day. In matters of fact, moral evidence is all that is attainable; and with this every rational mind will be satisfied. We believe our senses, we believe our memory, we give credit to testimony, and are persuaded, that we live, judge, and reason; and yet all this, for aught we can *demonstrate* to the contrary, may be a mere illusion. But such is the inconsistency of the Atheist, that he denies or doubts the existence of Deity, though supported by evidence similar, in kind, to that, on which every hour of his life he believes other facts, and still stronger in degree. Does he require the evidence of sense, to convince him of this truth? The requisition is absurd. Is it possible, that an infinite Being should be an object of

limited perception? Is every thing, which we can neither see nor hear, to be pronounced a mere *ens imaginationis?* May not a cause be inferred, as certainly existing, though it never came under the cognizance of external sense? It is by the qualities and properties of substances, by which their existence is known. Do we see or touch intelligence, or design? These are not sensible qualities or operations, yet we infer with certainty their existence from their effects. And wherever these are exhibited, we conclude, that there must be a subject, to which they belong, whether that subject be, or be not, an object of perception.

When we inquire, then, into the existence of a First Cause, instead of looking for evidence, which the subject excludes—instead of indulging in subtle and abstract discussions, which serve more to perplex than to convince, to confound than to enlighten the understanding—it would be wisdom to fix our attention on those plain, simple, and obvious facts, which are constantly before us, and which are placed within the range of the narrowest comprehension. Man needs only to look at his

own frame, to find wonders to excite his admiration. The heart that beats, the eye that sees, the ear that hears, the will that prompts, and the limb that moves, speak to him a language, which it seems hardly possible to misapprehend. The facts are simple and unequivocal; the conclusion is clear and irresistible. Here there is no danger of mistake: here then let us rest. If we are convinced, that these facts furnish incontestable proofs of intelligence and design, if we firmly believe, that the eye was made for seeing, and the ear for hearing, we require no metaphysical abstractions to convince us, that man was formed by the wisdom of a superior Power. And when the Atheist acknowledges* his belief in the existence of other animated and intellectual beings in the universe besides man, although he has not seen them, and of whose nature he admits that he may have no conception, we ask, with what consistency can he deny the existence of an Intelligent First Cause, merely because that Cause is not perceptible by sense, but an

* Hume's Dialogues on Natural Religion.

object of the understanding? Of all grounds of infidelity, this is the most irrational.

SECTION VI.

A SIXTH cause of Atheism, is the contradictory, not to say, the unworthy and degrading apprehensions, which have been entertained by some Theists of the nature of Deity.

I will not detain the reader with a tedious review of the various opinions of the ancient philosophers on this subject, some of whom entertained the most reverential, and others the most dishonourable, conceptions of the Supreme Being. Some believed him to be corporeal, and of the human form, though not consisting of material substance. Others, it would appear, unable to divest themselves of the notion, that indolence and ease are essential to dignity and happiness, forgetting, also, that the energies of Omnipotence are inexhaustible, and assimilating the attributes of Deity to the feeble faculties of man, believed that

the great Author of Nature, retired into solitude after the production of the universe, and, as if fatigued with his labours, secluded himself in the regions of extramundane space. But let us descend to times, which are deemed more enlightened. Some modern Theists, who consider themselves to be pious men, and I believe, are such, (for involuntary error is not impiety,) if they avoid the absurdity of clothing Deity with a human form, scruple not to represent him, as partaking of the worst of human passions. They ascribe to him anger—revenge—hatred—jealousy: and though the more rational Christian understands, that these feelings are attributed to Him, in accommodation to human conception, the vast majority, and of these, even some, who are professedly the teachers of others, represent the Almighty Parent of the universe, as indulging in these malevolent passions. Such is not the Deity, in whose existence a rational mind can believe. And, though they assert the goodness and placability of the Supreme Being, though he is exhibited in the religion, which they profess, under the endearing character

of Father, yet, Oh monstrous inconsistency! they represent him, as decreeing some of his own offspring to the pains of eternal misery, even before he called them into existence*. What could wanton and pure malignity do more? That the adorable and benign Parent of the universe should doom any of his creatures to endless suffering!—from the bare idea the soul recoils with horror. O God! how have thy transcendent perfections been darkened and disfigured by the blindness, the arrogance, and the bigotry of men! If we are required to believe in the existence of such a Deity, or to renounce at once the doctrine of Theism, can a rational mind hesitate a moment, which to prefer? Thanks to the Gracious Author of our being, we are not left to the wretched alternative. "God is good; and his tender mercies are over all his works."

It is very remote from my inclination, to insinuate even a censure on the reason-

* By the supralapsarian doctrine of Predestination, the Deity is represented as decreeing, in the counsels of infinite wisdom, and for his own glory, a portion of the human race to everlasting torment, before the foundations of the world were laid.

ings of men, distinguished by science, eminent for piety, and zealous in promoting the interests of religion and truth. But I must candidly own, that the metaphysical speculations, in which some theologians and philosophers have indulged, respecting the mode of the Divine existence, have appeared to me likely to obscure the subject, which they meant to illustrate, and to injure the cause, which they were solicitous to promote. The mode, in which the Supreme Being exists, in which he is every where present, and in which by his power he created and rules the universe, are, and ever must remain, subjects too profound for the faculties of man to investigate, or comprehend. They are veiled in impenetrable obscurity. And, while the necessary tendency of these speculations is to perplex and bewilder, it unfortunately happens, that the familiar illustrations, too frequently adopted, are derogatory to the dignity of the Divine Being, and diminish our reverence for his incomprehensible nature. This is not the only evil. What the Theist fails to elucidate, or rather, what he darkens by his fruitless attempts to illustrate, some will naturally conclude,

has no real existence; and that the doctrine, which he would explain, is at once incomprehensible and incredible. The piety of Sir Isaac Newton it is not our intention to call in question. But surely, when he represents space, as if it were the *sensorium* of Deity *, he resorts to a similitude, not only dark and unintelligible, but degrading to the transcendent majesty of the Great and Eternal Ruler of the universe. We debase Him in human conception, by representing Him, as if perceiving through the medium of corporeal organs. We are conscious of inexpressible horror, when we read the assertion of Spinoza, that the universe is Deity; are we not equally shocked, when we hear an eminent divine † represent Him, as "spatium tribus dimensionibus præditum." When Dr. Clarke says, that infinite space, and infinite duration, are properties of Deity, we cannot but condemn this con-

* "Atque—annon ex phænominis constat, esse entem incorporeum, viventem, intelligentem, omnipræsentem, qui in spatio infinito, tanquam sensorio suo res ipsas intime cernat, penitusque perspiciat, totasque intra se præsens, præsentesque complectatur."—*Newtoni Optice*, Quæst. 20.

† Dr. H. More. See *Baxter on the Soul.*

ception, not only as incorrect, but as also unworthy of the Divine character. What is space? Is it a real existent, or only a mere relation — an abstract idea? Dr. Clarke affirms it to be a property, and infinite space to be a property of Deity. Then, if space be extended, the Deity also is extended; and this is one of the leading doctrines of Spinoza. *Deus est res extensa. (Opera Posthuma.)* "Space and time", says Clarke, "are real quantities, and not the mere order of things." But quantities are divisible. The rational and pious mind revolts at the conclusion. What beneficial purpose do such speculations answer? In our apprehension they are worse than useless; they are pregnant with mischief. They betray superlative presumption in man, and have a direct and necessary tendency to inspire irreverential apprehensions of the Divine Being.

When the same enlightened philosopher who has just been mentioned, in explaining the ubiquity of the Deity, observes *, that God is present every where, not

* "Deus omnipræsens est, non per virtutem solam, sed etiam per substantiam; nam virtus sine substantia subsistere non potest."—*Newtoni Princip. Schol. Generale.*

virtually only, but *substantially, because power cannot subsist without a substance,* is not this to assimilate the Creator to the creature, by confining the energies of the Deity to the modes of human, or of physical, agency? Where there is power, there must be substance; but does it follow, that an Omnipotent Being must be substantially present, in order to accomplish the purposes of his will? In what rational sense can it be affirmed, that "the Deity constitutes duration and space?" Let us banish such speculations. We are too much disposed to judge of all modes of existence and operation by our own standard. When the Theist admits principles applicable only to our limited conceptions, and our narrow experience, as universally true, and applies our notions of modes of being to the Eternal and Self-existent Author of all things, he concedes a principle, which the Atheist eagerly seizes as the foundation of his infidelity. Thus some Theists have rashly assented to the gratuitous maxim, that no substance can act on another, unless they have some property common to both. The Atheist avails him-

self of the concession, and asserts matter to be eternal, and the only self-existent Being. It were well, if we reflected, that our mode of existing and acting is not the measure, or the similitude, of universal existence; and that every attempt to explain the incommunicable attributes of Deity can only betray our ignorance and our presumption, while it never fails to furnish occasion to the sneers and cavils of the Infidel and the Sceptic.

If the discordant and dishonourable apprehensions of the Divine Being entertained by some Theists, have proved detrimental to the interests of sound religion and rational piety, the evil has been highly aggravated by the effects, with which they have too often been accompanied; for they have unhappily engendered contentions, which have led to consequences, that every friend to humanity cannot but deplore. In these contentions and their lamentable results, the Atheist triumphs with exultation. He finds in them a ready and specious pretext for abjuring all religion, as the source of discord, persecution, and human misery. Had these differences of

opinion displayed themselves in calm and temperate discussion, the interests of truth might have been effectually promoted, and the tranquillity of the world might have remained undisturbed. Diversity of opinion is perfectly compatible with harmony of feeling. But, as has been already remarked, illiberal and offensive imputations—charges of impiety and blasphemy, absurdity and fanaticism, have been reciprocated with every asperity of language between the contending parties. Hence have been roused angry feelings, and some of the worst passions, that can blacken the human heart. These have raised the axe, and lighted the faggot of the executioner; and the world has beheld the revolting spectacle of human beings tortured to death, because they were too honest to dissemble their convictions, and too conscientious to abjure, what they conceived to be the truth—persecuted by bigots, believing, or professing to believe (Oh monstrous ignorance!) that, by tormenting His creatures, they delighted the Creator. Does the soul shrink with horror, when the savage Indian exults in the torments inflicted on his hap-

less captive—yet the Christian has witnessed without emotion, nay not without emotion, but with feelings of complacency, his fellow-creature expiring in flames, because the unhappy victim could not believe as he believed, nor would worship as he worshipped. O how repugnant is this rancorous and persecuting spirit to the precepts and example of the meek, the patient, the benevolent Jesus! Surely, surely the bigot of every denomination has yet to learn, that "the Deity is no respecter of persons", and that he, who feareth Him, and worketh righteousness in whatever age or nation, will be accepted by Him. With what indignation must that Almighty and Good Being, if indignation can dwell with pure and perfect benevolence—that Eternal and Incomprehensible Being, in whose presence circle thousands and thousands of worlds—with what indignation must He look down upon the creature man, worrying his fellow mortals about modes of faith, and forms of worship.—These unquestionably have their value; but this value is in their fruits. To think humbly of ourselves, liable as we are

to errors both in faith and practice, and to judge charitably of others, is our duty as men, and the peculiar obligation of Christians. And, though the Atheist may fancy himself justified in repudiating all religion, because its professors have too often betrayed a spirit irreconcileable with its dictates, he should bear in mind, that while the genuine tendency of true religion is to purify the heart, and improve its affections, the natural effect of his own hypothesis is to debase the soul, and to render man a selfish and miserable being.

SECTION VII.

It will not, on reflection, appear surprising to those, who have given even but a little attention to their perceptions and feelings, that the very circumstance, which should confirm, has a natural tendency to weaken, our belief in the existence of a Supreme Being. It is a fact attested by universal experience, that a familiar acquaintance with the same phenomena, and a habitual attention to the same series of

proximate causes, however striking when new to observation, have the necessary effect of impairing that conviction of wisdom and power, with which, when they were first contemplated, they irresistibly impressed us. Our sense of beauty and deformity, with the sublime emotions of the soul, as astonishment, awe, admiration, and terror, are uniformly diminished, if not wholly annihilated, by a familiarity with the objects, by which they were first excited. The sexton traverses at night through the lonesome church-yard, unconscious of fear, while the occasional passenger trembles perhaps at every step he takes, and stands aghast at every object, which meets his eye, "darkling through the shade." Hear a Swiss talking of the mountains of his country, and listen to a Hollander descanting on the same scenery, and you would hardly believe that they were describing the same objects. The stupendous mountain, the roaring cataract, the stormy ocean, and heaven's starry concave, when repeatedly contemplated, gradually lose their grandeur and sublimity, till at last we view them with comparative indifference. A similar effect is produced by

familiarity with extraordinary productions of human ingenuity, or human power. The huge pyramid and the gothic pile, after being frequently surveyed, cease to inspire that solemn awe and veneration, which either their antiquity or their magnitude at first awakened. If we look back to the admiration and astonishment, with which we viewed in childhood any curious production of art, and compare it with the indifference with which we now regard it, we shall feel a confirmation of the same truth.

The system, in which we are placed, abounds in wonders; but the continued exhibition of them has rendered them familiar to our senses. We survey, without emotion, the resplendent sun, day after day, pursuing his course, through the vault of heaven, imparting light and heat to this our terrestrial ball. Equally unmoved, when he leaves us in darkness, and when night discloses a still grander and sublimer scene—do we behold the refulgent moon encircled by the starry host, suns numberless, as their distances are immeasurable, revolving around us, in silent and solemn majesty. Every morning presents us with

a scene, calculated to fill us with astonishment and admiration,—the sun rising on a benighted world, the earth clothed with verdure, teeming with life, and pouring forth its bounties for the support of man and beast, the animal creation awakening to renewed activity, hill and dale, wood and water, presenting us with charms to delight the sense, and the whole of nature wearing a gay and cheering aspect. But the sight is familiar, and we are apt to view it with apathy and unconcern. But what would have been the effect, if we had been strangers to such a spectacle, and if it had burst on our sight for the first time, possessed of our present susceptibilities and powers?

"If it had been possible", says an eloquent and ingenious philosopher, "for the generations of mankind to have existed in security in a world of darkness, and that splendid luminary, by the regular appearances of which we now date our existence, had suddenly arisen on the earth, how immediately it would have suspended every project and passion—all those projects and passions, which fill our hearts at present

with their own petty objects, so as scarcely to leave room for a single better thought. The gayest trifler would, for an instant, have ceased to be a trifler. . . . . The very Atheists of such a world, whose chief amusement in their blindness, had been the ingenuity in proving, that the world must have existed for ever, as it existed then, would almost have felt, on such an appearance, that there is a power which can create, and would have been believers in that power, for some moments at least, though they might have hastened, as soon as their superstitious fear permitted them, to accommodate the new phenomenon to their system."* *Brown's Lectures*, vol. iv. p. 407.

* We find in Cicero a passage quoted from Aristotle, nearly to the same effect. "Si essent, inquit, qui sub terra semper habitassent bonis et illustribus domiciliis, quæ essent ornata signis atque picturis, instructaque rebus iis omnibus, quibus abundant ii, qui beati putantur, neque tamen exissent unquam supra terram, accepissent autem fama et auditione esse quoddam numen et vim Deorum, deinde aliquo tempore, patefactis terræ faucibus, et illis abditis sedibus evadere in hæc loca, quæ nos incolimus, atque exire potuissent; cum repente terram et maria cœlumque vidissent, nubium magnitudinem ventorumque

When the youug astronomer becomes acquainted with the magnitudes, the motions, and the distances of the heavenly bodies, his whole soul is lost in astonishment, and the most reverential conceptions of an Almighty Cause are irresistibly created. But, as he proceeds in the study, and as the objects themselves, and the laws, by which they are governed, become more familiar to his mind, he sits down to calculate their various phenomena, with as frigid indifference, as he would measure the distance between one hillock and another. The young anatomist, when his attention is first directed to the constitution of the human frame, is naturally led to admire the curious and complicated structure of the system, the aptitude of the several organs for their respective functions, and

vim cognovissent, aspexissentque solem, ejusque tum magnitudinem pulchritudinemque, tum etiam efficientiam cognovissent, quod is diem efficeret, toto cœlo luce diffusa: cum etiam terras non opacasset, tum cœlum totum cernerent astris distinctum et ornatum, lunæque luminum varietatem tum crescentis, tum senescentis, eorumque omnium ortus et occasus, atque ab omni æternitate ratos immobilesque cursus; hæc cum viderent, profecto et Deos esse, et hæc tanta Deorum opera esse, arbitrarentur." *Cic. de Nat. Deor. lib.* 2.

their harmonious co-operation for the purposes of utility, and one common end. We venture to affirm, that no man ever examined for the first time the process of nutrition, alone, without being struck with astonishment, and prompted to exclaim, "Wonderful are the works of the Creator; in wisdom has He made them all." This admiration, irresistibly excited by such wonderful adjustments of causes to effects, adjustments inexplicable on the hypothesis of chance or blind necessity, is unavoidably accompanied with the firm conviction, that this wonderful organism must be the production of consummate wisdom. But repeated examinations of the subject render it so familiar to his senses, that the admiration, which it once roused, gradually subsides, and at last sinks into almost stupid indifference. As the watchmaker takes his machine to pieces, and puts these together again, without a single thought of the ingenuity which it displays, and with which he was probably once most forcibly impressed, so the anatomist, long familiarized to the structure of the human frame, will dissect it into its constituent parts, and, busied

solely about proximate causes, will explain these to others, without the slightest emotion of wonder, or the least sense of the transcendent wisdom, which the system exhibits, and which the first examination naturally excited. It is true, that he perceives, and may demonstrate to the spectators, the ends, which are answered by the various organs, how, for example, this or that set of muscles serve to move this or that limb; but he perceives the facts with much the same indifference, and with equal insensibility to the wisdom of the plan, as the watchmaker describes the action of the various wheels and pinions of the watch. In like manner a person, long accustomed to the view of sublime or beautiful scenery, will point out to a stranger its most striking features, describing them perhaps in glowing language, and be unconscious, all the while, of the slightest degree of the corresponding emotions. It is one thing to perceive or describe, and another thing to reflect and feel.

Whence arises this indifference to phenomena, which once awakened our astonishment, and elevated the mind, from a per-

ception of their beauty, their grandeur, or their utility, to a conviction of a benevolent and intelligent Cause. Has the practised anatomist discovered, that the human body displays less skill, and less contrivance, than he once believed? Has he ascertained that there is less order, less congruity, less aptitude of the organs to their several functions, than he once imagined? No. These characters are still as legibly imprinted on the human frame, as they ever were; but they have become less impressive; and, constantly conversant in the same proximate causes, he loses sight of the wisdom displayed in their operation, and the beneficial purposes to which they are subservient. The skill and contrivance, which the structure demonstrates, and the wonder which it once excited, were closely associated with the conviction of an intelligent Author; but, when this wisdom, by reason of his familiarity with its effects, fails to impress him so forcibly as at first, and when the emotion of wonder ceases, the conviction, with which the emotion was originally associated, and which it contributed to strengthen, is less powerfully felt,

and the sentiment of belief is apt gradually to die away. Every man, who attends to the varying state of his own feelings and perceptions, must be conscious, that the impressive view, and the firm conviction, are not always present to the mind. He feels, that the same truth is not uniformly accompanied with the same persuasion, and that, in order to impart to the sentiment of belief that force, which it once possessed, he must revert to the same process of thought, or one similar to that, by which it was originally produced. He feels, that the same phenomena, which once arrested his attention, excited his astonishment, and enforced conviction with resistless power, cease, by repetition, to make the same impression, either on his heart, or on his understanding. When the landscape of the artist is first presented to our view, the eye naturally rests on its various features; and we admire the hill and the dale, the wood and the stream, the cottage and the spire, the shepherd and his flock. Repetition weakens the emotion, and, unless some new beauty present itself, to attract and arrest our attention, the eye traverses the land-

scape, unimpressed either with the ingenuity of the artist, or the richness of the scenery. The impression, however, though less powerfully, may still be revived, by reviewing the landscape, with renewed attention, and pausing, to examine the subjects in detail. If, by reason then of long familiarity with any process or department of nature, it ceases to inspire those emotions of astonishment, and admiration, which it once excited, may not a similar procedure be advantageously adopted? A deliberate review of the phenomena, embracing a patient attention to the causes and the effects, the aptitude of the means employed to the purposes accomplished, the simplicity of these means, and the beneficial end, to which they are subservient, will contribute to rewaken the dormant emotion, and recal the lively conviction of an Intelligent First Cause.

This effect, however, may be more powerfully produced by varying the objects, to which our view is directed. New phenomena excite curiosity. They rouse our attention, while they address our feelings and our judgement with greater force.

Were the anatomist, who never reflects on the wonders of his own frame, and has ceased to feel the correspondent emotion, to direct his view to any other department of Nature—were he, for example, to contemplate the planetary system, the countless suns, which night discloses, the vast, though comparatively insignificant, magnitude of our globe, the rapidity and regularity of its motion, the genial atmosphere with which it is clothed, the astonishing processes by which air, food, and water are furnished to the animal and vegetable creation,—or were he to descend to phenomena more minute, but not less wonderful, and observe, how the bee constructs its cell, how the spider weaves its web, how the beaver builds his dwelling, how the ant-lion excavates his den*, and how the

* If we examine the ingenuity and industry, with which this little insect, incapable of hunting for its food, scoops out its hole, using, alternately, one of its fore-legs, as either is fatigued, for a shovel, the patience and perseverance it exhibits in conquering difficulties, the aptitude of its den to entrap its prey, and the art, which it displays, in preventing escape, we cannot but be struck with admiration and astonishment. If we were required to show how this insect, which has only a retro-

various tribes of animals, in their several spheres, are enabled to distinguish and procure their food, the bird winging through the air, the fish traversing the sea, and all guided by an unerring instinct—were the mere anatomist, I say, who, by his professional habits, surveys his own frame with superlative indifference, to direct his attention to these, or other new and striking phenomena, the contemplation could not fail to awaken his astonishment and admiration, nor could he resist the conviction, which it would impress, of an All-wise and Almighty First Cause.

When the mind, then, has had its attention confined to only one department of nature, or to only one particular class of phenomena, and when these, by reason of our familiarity with them, cease to awaken those emotions and convictions, which they are calculated to excite, it may be useful, as a remedy for this indifference and apathy, to vary the objects of our contemplation. The world of nature presents an exhaust-

grade motion, and so slow, as to be incapable of catching its prey, might find its food, we should, with all our ingenuity, be puzzled to solve the problem.

less field for this supremely important purpose; and he, who has most extensively surveyed it, will entertain the most permanent and reverential apprehensions of its Author.

We have now specified, what appear to us to be the principal causes of the Atheist's unbelief, suggesting, at the same time, such antidotes as may prevent, and such correctives as may remedy, this the worst of all human evils. These causes operate with greater or less force in different individuals. Their influence over our feelings and convictions depends wholly on the moral and intellectual circumstances of our condition in life. Mental constitution, early education, professional habits, the course of study, and the state of that society in which we are placed, will either second or counteract their operation. We are persuaded, however, that there are few, if any, who have either doubted or disbelieved the existence of a Supreme Being, whose scepticism or infidelity may not be traced to one or other of the preceding causes.

ESSAY I.

ON THE

EXISTENCE OF DEITY.

CHAPTER I.

SECTION I.

The question stated.—Clarke's argument to disprove the eternity of matter examined.

WHETHER there exists a Supreme and Intelligent Cause, the Author of all-created being, is the most momentous subject, that can engage the attention of the human mind. With the solution of this question, superlatively interesting to our hopes and fears, are connected several other inquiries of nearly equal importance, as affecting our views of the destiny of man, and of the character of that system, to which he belongs. Whence am I? Whence the numberless creatures which inhabit this globe? Had the human race a beginning? Or have they existed from eternity? If they had an origin—were they the pro-

ductions of design—or were they the offspring of chance, or the effects of an eternal and unintelligent necessity? Is there, or is there not, a Supreme Presiding Power, governing every movement, moral and physical, throughout the universe, by the counsels of infinite Wisdom? For what purpose were we made? Have the countless myriads, who, in ages past, peopled this sphere, been consigned to annihilation—to be for ever, as if they had never been? Or is there an ulterior destination awaiting all, when the connection between us and the present state shall be dissolved?

These are inquiries, which naturally excite the curiosity, and compel the attention, of every human being, as soon as he is capable of reflection, and meditates on the condition, in which he finds himself existing. He can neither dismiss them with indifference, nor agitate them with unconcern. The man, who feels no interest in these questions, who regards not, what was his origin, nor what will be his end, whether he be a creature of chance, the offspring of blind necessity, the existent of a day; or whether he be the production of a Superior

Power, and destined for immortality; must be either an idiot, who cannot think, or as insensible as the clod, on which he treads, without a sentiment of hope or fear.

Of these questions, the first in order, as it is the first in importance, is that, which regards the existence of Deity. Is there, or is there not, an intelligent First Cause? Whence originated the universe?—Or had it no beginning? Whence especially this diurnal sphere, on which we are placed? Are its materials self-existent, and its forms fortuitous; or does it owe its origin substantially and formally to a Superior Power? Is there, or is there not, a Supreme Being, the Creator of all things, visible and invisible?

The Theist and the Atheist concur in believing, that something must have existed from eternity. If ever there was a time, when nothing was, nothing ever could have been. Pure nihility must have continued for ever. Something therefore must be self-existent; this the Atheist affirms to be matter, and the Theist, to be a Being immaterial, intelligent, and infinite in all his attributes, natural and moral.

The eternity of matter is a hypothesis, which was maintained by many of the ancient Theists. Incapable of conceiving, how it could be created, and rashly concluding, that human conception is the measure of possibility, they believed it to be self-existent, but subject to the government and control of an Intelligent and Presiding Power. To assert, that it is not only self-existent, but the only existent being, is either Atheism or Pantheism; but the hypothesis of its eternity, how gratuitous and unphilosophical soever it may be proved to be, is by no means incompatible with the belief, that there is an Intelligent and Superior Power. We find, indeed, that this doctrine was maintained by some of the primitive Christians; and Justin Martyr informs us, that it generally obtained, in his time, adding, in another passage, that the doctrine of Plato on this subject coincided with the doctrine of Moses, from whom he borrowed it.

When the Atheist rejects the doctrine of an Immaterial and Eternal Being, and asserts the eternity of matter, has he seriously and attentively examined the diffi-

culties, which accompany the belief of its very existence? Are there no objections here to remove, no perplexities to disentangle, no contradictions to explain? Has he ever inquired, how it is possible to reconcile the existence of matter with its infinite divisibility? This property is implied in the very notion, that every particle must be extended, and that there can be no limit to the division, unless we suppose it possible, to arrive at something, which has no extension, and therefore is not material. Has he ever then inquired, how the possibility of the quality can be reconciled with the existence of the substance? If it is a fact, as there is reason to believe, that he never came into contact with a particle of this matter—if many of the ancients, in their metaphysical speculations, concluded it to be incorporeal, while some modern philosophers have pronounced it to be nothing, but points of attraction and repulsion—if all that we are conscious of be merely impressions on our senses, and if matter, if existing, exists only as perceived—if there be no limit to its divisibility, and yet without a limit it be com-

posed of nothings, and if there be a limit, the absurdity follows, that what is extended, is yet indivisible,—if such difficulties, not to say, seeming contradictions, embarrass the hypothesis of the Hyloist, does not the very existence of that substance, which the Atheist believes to be eternal, become somewhat doubtful.

It is not our intention to advocate the doctrine, ingeniously maintained by the Bishop of Cloyne, nor, with Mr. Hume, to dismiss both matter and mind as nonentities, asserting nothing but impressions and ideas; but we are justified, we conceive, in affirming, that the very existence of matter is a hypothesis involving difficulties, which its advocates cannot surmount. And to those, who affirm the eternity of matter, because the doctrine of creation appears to them to involve a metaphysical contradiction, we may surely be allowed to oppose an equal contradiction, by which their own hypothesis, metaphysically examined, is evidently embarrassed. That the doctrine of its eternity is gratuitous and improbable, it shall be our endeavour hereafter to evince. In the meantime, it is our pur-

pose rather to reason with the Atheist on his own ground, to admit the self-existence of matter, and to shew, that neither chance nor necessity, even with this concession, can account for the formation of the universe.

When we said, that the hypothesis of the self-existence of matter is gratuitous and improbable, some readers may complain, that our censure is expressed in terms too favourable to its real character. We are fully aware, that the celebrated Dr. Clarke instituted an argument, in which he endeavours to prove, not its falsity or its improbability only, but its palpable absurdity; and that his reasoning, though unsatisfactory to some metaphysicians, has been pronounced by the majority, to be strictly logical and conclusive. Every argument, proceeding from so distinguished a name, we naturally approach with all the deference and attention, which preeminent intellectual powers irresistibly command; and as the doctrine, which the learned author would establish, accords, in the present instance, with our own, we necessarily feel a prepossession in its favour,

and a disposition to hail the argument as conclusive, rather than reject it as false. But it would be a disingenuous suppression of our deliberate conviction, if we did not candidly acknowledge, that the validity of his reasoning appears to us to be questionable, and that the legitimacy of his conclusion may be justly disputed. The intelligent reader, however, will judge for himself. The argument proceeds thus.

Whatever has existed from eternity, independent, and without any external cause, must be self-existent. This position is incontrovertible. Whatever is self-existent must exist necessarily, by an absolute necessity in the nature of the thing. This also is self-evident. It follows, therefore, that, unless the material world exist necessarily, by an absolute necessity in its own nature, so that it must be a contradiction to suppose it not to exist, it cannot be independent, and eternal. In order to disprove this absolute necessity, he reasons thus: "If matter be supposed to exist necessarily, then in that necessary existence is included the power of gravitation, or it is not. If not, then in a world merely ma-

terial, and in which no intelligent Being presides, there never could have been any motion. . . . . But, if the power of gravitation be included in the pretended necessary existence of matter, then it following necessarily, that there must be a vacuum, it follows likewise, that matter is not a necessary being. For, if a vacuum actually be, then it is plainly more than possible, for matter not to be."

This is the author's celebrated argument. From gravitation he infers a vacuum, and from a vacuum he concludes the certainty, that matter cannot be a necessarily existent being. Now, we apprehend, that an opponent may contend, that gravitation does not involve the necessity of a vacuum. Spinoza, Leibnitz, and several other philosophers, have denied its existence; and he may affirm, that the abstract argument in favour of it*, like every other

* See the metaphysical argument stated in Jones's "Essay on the First Principles of Natural Philosophy," p. 31.

Aristotle's proof is founded in error. Ου γαρ αν δοκοιη ειναι κινησις, ει μη η κενον, το γαρ πληρες αδυνατον ειναι δεξασθαι, δε δεξαιτο, και εστι δυω εν τω αυτω. "If there were no

attempt at the metaphysical demonstration of a matter of fact, amounts to nothing. He may contend, that its truth can be established only by experience and observation; and appealing to these, he may be disposed to maintain, that we have no incontestable evidence, that there is any place, whence air, and light, and caloric, and the electric fluid, are all entirely excluded. He may admit with La Place, that the celestial bodies seem to revolve without any perceptible resistance *, and still consider this fact, as furnishing no decisive evidence of an absolute vacuum. The argument, therefore, founded in an assumption, the truth of which is questionable, he may reject as inconclusive.

But, were it admitted, that a vacuum does exist, or may be produced, it may be asked, by what argument is it demonstrated, for

vacuum, there could be no motion; for what is already full can receive nothing into it; if it did, there would be two bodies in the same place."

* *Vince's Sermons*, p. 101. La Place, however, acknowledges, that the planets do not move through a *vacuum*, and suspects, that their orbits may in course of ages be sensibly changed. *Expos. du Système du Monde*, lib. v. cap. 6.

the position is not self-evident, that a being, existing by the necessity of its own nature, exists *every where*. That it must exist *at all times*, is evident; for to suppose an interruption of its existence would be to suppose a contradiction; but is it equally a contradiction to say, that it may not exist in all places, at the same time? The celebrated author of "The Analogy between Natural and Revealed Religion," who at first questioned the validity of Clarke's reasoning, subsequently acknowledged, in his correspondence with him on this subject, his conviction, "that absolute necessity has no relation to time or place; and therefore that a necessary being must exist every where." It will not be denied, that the former of these propositions is unquestionably true, when confined to judgements involving a metaphysical necessity. Their truth is independent on time and place. But is it equally certain, when applied to actual or substantial existence? Does necessity here imply the ubiquity of its subject? Dr. Clarke answers in the affirmative; let us hear his reasoning.

"If an Atheist will yet assert, that mat-

ter may be necessary, though not necessary to be every where, I answer, that this is an express contradiction; for absolute necessity of existence is absolute necessity every where." We stop for a moment to remark, that an inattentive reader is here in danger of being misled, by a proposition not obviously ambiguous. In one sense it is true, and in another false. A distinction must be made between that necessity, by which a substance must exist, unaffected as to its being by a change of time or place, and that necessity, by which it must exist in all places. If the position of Dr. Clarke refer to the former necessity, its truth is incontrovertibly evident; if to the latter, it may be denied. Necessity of existence is necessity every where; that is, change of place cannot nullify the necessity; but it does not appear, that this necessity involves the attribute of ubiquity.

"If matter," continues Dr. Clarke, "be absent from one place, it is not impossible, that it should be absent from any other, or from every place." In another passage, he states the argument in the following terms: "Whatever may, without a contra-

diction, be absent from any one place, at any one time, may also, without a contradiction, be absent from all places, at all times;" that is, as he afterwards explains his meaning, "may either cease to be, or never begin to be." Is there any absurdity in believing, that a particle of matter may be imperishable, existing by the necessity of its own nature, and yet not existing every where? And what is true of one particle, is true of all the particles, of which the universe is composed. If the sun is now absent from our view, and below the horizon, does it follow, that he may possibly not exist either formally or substantially? This conclusion could be just, only on the ground of a *petitio principii*, that he does not exist necessarily either in form, or in substance; or by supposing the contradiction, that his annihilation, as an effect, can be produced without a cause. Whatever exists, must exist either necessarily or dependently. If necessarily, it must continue for ever to exist; if dependently, it can be annihilated only by the Power, that gave it being. If the existence of such a Power be the fact to be proved, the latter alter-

native must be excluded from the argument. "Whatever," says Dr. Clarke, "may without a contradiction be absent from any one place, at any one time, may, without a contradiction, be absent from all places, at all times." This consequence, we apprehend, does not follow. From relative non-existence we are not warranted to conclude absolute non-existence. An atom, as has been remarked, may exist by the necessity of its own nature, and yet not exist every where; the latter indeed would be a physical impossibility; and if it exist necessarily, it would be a contradiction to suppose it not to exist somewhere, though not existing every where. It may, without a contradiction, be absent from any one place; but it cannot, without a contradiction, be absent from every place; for then it would be non-existent; but to be non-existent, and yet necessarily existent, is a metaphysical impossibility. The contradiction would be, in supposing it not to exist. It would appear, then, that it does not follow, that because matter, or any particle of matter, may, without a contradiction, be absent from any one place,

at any one time, that it may be absent from all places, at all times, unless by assuming, what it is the object of the argument to prove, namely, that matter does not exist by the necessity of its own nature. It is acknowledged, that "necessity of existence is necessity every where," if by this is meant, that, wherever the necessarily existent being is, it must be imperishable, or that there is no place, where it cannot exist. But this proposition differs widely from the assertion, that, if an atom of matter, or the material universe, exist necessarily, it must exist in all places, at the same time. The former proposition cannot be false; it must be true. But independency of existence on time and place, cannot necessarily imply ubiquity of existence.

"When I say," observes Dr. Clarke, "that necessity, absolutely such in itself, has no relation to time or place, my meaning is, that it has no relation to, or dependence upon, any particular time or place; but that it is the same, in all times and in all places."* The explanation is clear, and un-

* Answer to Letter Sixth.

objectionable: but how does independence on time or place for existence prove, that the existent must exist every where? The power of existing at all times, and in any place, is widely different from the necessity of existing at the same time, in every place. Necessity of existence clearly implies eternity of being; but it does not involve the attribute of ubiquity, otherwise the absurdity would follow, that every atom of matter, if existing by the necessity of its own nature, must exist in all places, at the same time.

Dr. Clarke contends, that absolute necessity is antecedent, in the order of nature, to the existence of any subject. To this proposition it seems impossible to assent. A necessity of existence, antecedent to the existence of a necessary being, is a palpable absurdity. A necessary being must be self-existent, and eternal. The necessity must be co-existent with himself. What is antecedent to eternity?

Of the validity of the objections here offered to Dr. Clarke's reasoning, the intelligent reader will judge for himself. In candour we acknowledge, that the reasoning

appears to us to be illegitimate, and inconclusive. It is founded on the assumption of a physical fact, namely, the existence of a vacuum. If there be no vacuum, the assumption is false, and the argument fallacious. If there be a vacuum, the metaphysical position, that what exists necessarily must exist in all places, in the sense required by Dr. Clarke's reasoning, not being self-evident, remains to be proved. It may indeed be fairly presumed, that, if the hypothesis of the self-existence of matter involved any contradiction, it could not have escaped the penetration of several Christian, as well as heathen, philosophers, who believed in the eternity of material substance.

But, though it may be impossible to demonstrate, by metaphysical argument, the absurdity of the hypothesis, which maintains the eternity of matter, its falsity may be evinced to the complete satisfaction of every candid and reflecting mind, not vain enough to believe, that all possibilities are within the range of its comprehension. To this subject we shall hereafter have occasion to return. In the meantime we

would observe, that, if the doctrine of the Divine Existence be established, the hypothesis of the eternity of matter may be dismissed, as an idle and useless supposition. If one cause is adequate to an effect, philosophy rejects the introduction of more. If the atoms of matter, on the hypothesis of chance or necessity, are incapable of accounting for the construction of the universe, the conclusion seems irresistible, that both they, and all their modifications, had their origin in the wisdom and power of one and the same Cause. This argument alone should suffice to convince us of the non-eternity of matter,—an argument, which we shall afterwards have an opportunity of urging at greater length. At present, let us encounter the Atheist in his own field. Let us admit, what he assumes, —the eternity of matter; and inquire how far it is rational to believe, that existing phenomena could have been produced by the agency of chance, or necessity.

SECTION II.

The hypothesis, that matter existing from eternity, by accident or necessity assumed existing forms, is in the highest degree incredible.

"Quod si omnes mundi partes ita constitutæ sunt, ut neque ad usum meliores potuerint esse, neque ad speciem pulchriores, videamus utrum ea fortuita sint, an eo statu, quo cohærere nullo modo potuerint, nisi sensu moderante, divinaque providentia."—CIC. DE NAT. DEOR.

WE shall begin with an examination of the hypothesis, by which it is maintained, that the elements of matter have existed from eternity, and, in the revolution of ages, were, by accident, or the laws of an unintelligent nature, congregated into their present variety of forms.

Now, it must be evident, that, if these elements or atoms have existed from eternity, they must have existed, either in a state of motion, or a state of rest. If the latter alternative is assumed, it is certain, that they must have continued for ever in a state of quiescence. For, matter being the

subject of a *vis inertiæ*, that is, no atom of it having power of itself to change its condition, whether of motion or of rest, motion would, in such circumstances, be a physical impossibility.

It has been urged, that matter gravitates towards matter; and that such atoms or particles, as were within the sphere of mutual attraction, would concur, and that masses would thus be gradually formed. The supposition of such concurrences is directly repugnant to the assumed quiescence of matter. For, if any two particles had been within the sphere of mutual attraction, if attraction can have any limit, their quiescence would have been impossible; they must have gravitated towards each other, and must have been in motion, which contradicts the supposition. If they were quiescent, as the hypothesis assumes, they must have been beyond the limit of mutual effective attraction, if such hypothesis be admissible, and must therefore have remained for ever in a state of rest. Either they were within the sphere of mutual attraction, and were in motion, contrary to the supposition, or, if not in motion, they

must have continued eternally quiescent. Let us now examine the alternative, by which it is maintained, that every particle of the elementary chaos was in motion from eternity. This was the doctrine of Leucippus, Democritus, and the Epicurean philosophers.

This hypothesis is erected on an assumption entirely gratuitous. It presumes, that matter possesses, inherently and independently, a gravitating power, or a tendency to motion. It is the character, indeed, of every modification, in which the Atheistic hypothesis is presented to our examination, that it assumes as a fact, that matter possesses certain innate properties, to the agency of which the Atheist ascribes the formation of the earth, and the production of its vegetable and animal organisms. On this assumption the hypothesis rests. The Theist, on the contrary, affirms, that matter possesses no inherent powers, no independent properties; and maintains, that they are either the communications, or the energies, of an Intelligent and Designing Cause. To assume either hypothesis, is to beg the question; neither must

be taken for granted. If the one or the other is capable of proof, the evidence of its truth will reasonably be required.

The Atheist, we are aware, may deny, that his assumption is gratuitous. He may contend, that, wherever matter is found, these properties are known to belong to it, and that attraction pervades the physical universe. He may affirm, that he assumes no position, but what is founded in observation and experience—an experience co-extensive with our physical researches, universal, and irresistibly conclusive.

Now, as the Atheistic hypothesis rests wholly on the presumed existence of inherent and independent properties and powers in matter, if it can be shewn, that we have no evidence of such essential properties, and that, in fact, we have no incontestable proof, that matter possesses any active powers; and if it can be shewn, that, if such powers even existed, experience could furnish no satisfactory reason for believing, that they are eternally and independently its own, the hypothesis of the Atheist, erected on this assumption, must fall to the ground.

1st. It is assumed, that matter possesses an attractive power, to the influence of which the celestial phenomena may be referred, as the primary cause. We have already expressed our disapprobation of the term *attraction*, as leading to false association, and erroneous conclusions. We now affirm, that, though the theory of the planetary motions, in respect to their modes or laws, is incontrovertibly established by indisputable facts, the doctrine of attraction as the primary cause, or a cause in any sense, is nothing but mere hypothesis. Newton did not presume to assert so unphilosophical an opinion *. The term *attraction*, if confined to its real and only intelligible meaning, implies *a drawing towards* by some connecting medium, or *vinculum*, and was originally expressive of the act of a voluntary agent. It would be ridiculous to maintain, that in this sense any such attraction exists in the planetary system. If the term is employed to signify,

* "Hanc vocem attractionis ita hic accipi velim, ut in universum solum modo vim aliquam significare intelligatur, qua corpora ad se mutuo tendunt, cuicunque demum causæ attribuenda sit illa vis."—*Princ. Schol. Generale.*

not the cause, but merely the phenomenon, and is adopted for convenience, the hypothesis of an attractive power must be abandoned, and instead of employing this and its correlative term, we may as well recur to the φιλια and the εχθρα of the ancients, or the *sympathy* and *antipathy*, with which physiologists in modern times have amused us, in their physiological disquisitions. In this sense, then, *attraction* is nothing but an inapposite name, to express a phenomenon, of which the cause is unknown. It explains nothing. As a cause, its operation is inexplicable; it is irreconcileable with every known mechanical principle. That a body can act through a vacuum, if a vacuum be assumed, on another body at a distance from it, Newton pronounced to be absurd and inconceivable. If a quiescent fluid be supposed, in order to remove the difficulty, we are acquainted with no mechanical principle, by which this interposing fluid could produce the mutual approximation of two distant bodies. If an impelling fluid be assumed, the effect would be an equable, not an accelerated motion; but this is contradicted by the

phenomena. And here the question recurs, by what agency is the impelling fluid agitated into motion? Here we are involved in the same difficulty *.

If the Atheist abandons attraction as a power, and contents himself with affirming gravity to be an innate tendency of matter to matter, we answer, that we cannot receive a mere assumption for fact. Before this can be conceded, it must be clearly ascertained, that this tendency is not an effect. A steel spring possesses elasticity, but the power is communicated, not inherent. The mere fact of the mutual approximation of two bodies does not prove, that the cause is not external. Matter, by its own agency, cannot change its place. It possesses no spontaneity. It cannot move, or stop itself. It must be acted upon by other matter; or, to speak more

* If such fluid existed, as either mediately or immediately the primary cause of motion, it seems impossible, that it should account at once for the centrifugal and centripetal tendencies. Acting, too, by necessity, it would move all the planetary bodies in one and the same direction. But this is contrary to fact; for the satellites of the Herschel move in a retrograde direction.

correctly, its motion must be towards other matter, in the absence of which it would be quiescent. If the universe were one mass, it would be for ever at rest. No particle has the power of moving itself to another particle, while that other remains quiescent. If neither has an innate power of spontaneity, and cannot move itself, it is a fair presumption, that it cannot move the other, and that their approximation is caused by some external agency. We see bodies gravitate; the fact is obvious; but we have no right to assume an innate power, for the phenomenon may be an effect.

2dly. It is assumed, that matter possesses universally a power of gravitation. We ask, if it be incontestably true, that this is the fact? Is the assumption so indisputable, as to admit no doubt? Have philosophers, with one voice, concurred in acknowledging it? Are there no phenomena, which seem to oppose it? If this power be not universal, it follows, that it cannot be regarded as a property essential to matter, or inseparable from its nature.

Light has been considered by philosophers to be an imponderable fluid,—a

body, as it has been termed, *sui generis*, and incapable of gravitation. Whether this hypothesis be true or false, its contrary involves great, if not insuperable, difficulty. We know, that the sun is many thousand times bigger than our earth, and bodies therefore must gravitate towards him, with proportionally greater force; yet his rays proceed from him to our planet with inconceivable rapidity. Is there not some difficulty, in reconciling an incessant stream of light from the sun, not only to our earth, but to the distance of nearly 2000 millions of miles, with the supposition, that this fluid gravitates? Are we sufficiently acquainted with caloric, or with the electric fluid, as to justify us in affirming, that they have the property of gravitation? Do not the phenomena lead us to conclude, that light, and the electric fluid, are imponderable? But, if there be any material substance, destitute of this property, it cannot be a property essential to matter: and, if its existence in any substance be doubtful, the hypothesis, which asserts its universality, must be doubtful.

Again, we have no clear evidence, that any two particles of matter are in actual contact. An adequate force would compress a mass into a hundredth, or a thousandth part of any given volume. This would be utterly impossible, if all the constituent parts had been previously in close cohesion. Attraction, in this case, would seem not to operate, or would appear to be counteracted by a conflicting force, otherwise the particles would not remain in a state of separation. The phenomena of electricity, and also of elastic bodies, the reflection of light, without touching the reflecting surface, and various other acknowledged facts, render it extremely doubtful, whether any two particles of matter be in actual contact, and whether a power of repulsion, as it is commonly termed, does not obtain among particles of the same mass. A ball descends to the earth by the power of gravitation; so at least we express the fact; but before the ball comes in contact with the ground, it is repelled. Here we have mutual attraction, and mutual repulsion exhibiting themselves

at different distances. Magnetic poles of the same name repel, instead of attracting each other. Does not the Atheist then assume too much, when he asserts, notwithstanding these facts, that gravitation is a universal and essential property of matter? Is there not some difficulty in believing, that a self-existent being can have mutually repugnant powers? Is it not more rational to conclude, that they are not powers or causes, but effects of some ulterior power? This seems to be the more philosophical conclusion.

But were we to concede to our opponent the point of universality, the concession would not avail him; his argument would still rest on nothing, but assumption. The question would still be, whether the universality of gravitation be the universality of a Supreme Intelligent Agency, or the universality of an inherent and independent attribute of matter *.

* It might be here asked, in passing, if matter has inherently and independently a tendency to matter, how it happens, that this tendency is uniformly rectilinear? We do not question the fact, or Newton's first law of motion, that a body perseveres in a state of rest, or of

This would be still the question, and neither of the alternatives is to be gratui-

uniform motion in a right line, unless compelled to change that state by forces impressed upon it; but we ask, why is it so? If it is answered, that the body must move in a straight line, if there is no force, by which it can be deflected, this is only to assert, what is not disputed, that, by a law of its being, its motion is rectilinear. But whence is this law? If it is the ordination of a wise and designing Cause, the phenomenon is explicable. An intelligent being takes the straight line between himself and an object, that he wishes speedily to reach; and an intelligent being may have imparted to matter the property of rectilinear motion. But, if it result from fate, or necessity, or chance, we ask how it is possible, that without the direction of intelligence, the motion of a body towards a central point should uniformly be in a straight line, as if matter knew its shortest path. Epicurus saw no absurdity in the supposition, nay, in order to reconcile existing phenomena, with his atomical hypothesis, he scrupled not to maintain, that the particles of matter had a power of moving obliquely, and that this power was inherent in themselves. It was on this principle, that he attempted to explain the free agency of man. If we exclude the influence of intelligence, there seems no reason, why matter should not move obliquely towards a central point. We repeat, that we are perfectly aware, that a curvilinear motion from one point to another, cannot be produced, but by the composition of forces, and that where such forces are absent, the motion must be rectilinear; but to state this, is merely to state the fact, without ex-

tously assumed. We should smile at the simplicity of an ignorant African, who, after having seen various clocks and watches constantly in motion, should infer, that they were animated, or that they moved by certain powers and properties of their own, contending, that, wherever he saw such objects, he perceived them uniformly in motion, and if he knew any thing of metaphysics, perhaps affirming also, that from the constant conjunction of any phenomena, he was warranted to assert, their necessary and inseparable connection. The possession of one of them for a week, or a shorter space, would convince him of his error. But, if this were not permitted to him, or if we suppose that the continuance of the motion exceeded the term not only of his own life, but of some preceding generations, then

plaining, why, out of a variety of directions, matter should always take the shortest. To ascribe it to chance, would be a violation of all probability; and to refer it to necessity, is to say, that it is so, because it must be so,—that matter without intelligence must act, as if it had intelligence. That mind must be strangely constituted, that can be satisfied with an explanation so paradoxical.

reasoning from experience, and having no knowledge of the origin of these objects, he would probably deduce the same erroneous conclusion.

Now it matters not to the argument, whether the motion last for a week, or for a year, or for a century, or for a myriad of centuries; the experience is limited. And though myriads of centuries appear to us an immense space of time, as the age of man would to the insect of a day, were it capable of thought; they are as a point to eternity. If our experience could extend backwards and forwards through indefinite ages, or our sagacity penetrate into the *arcana* of nature, we might, like the African, convinced of his error, perceive, that what we imagined to be self-moved, is moved by an external power; and that what we considered to be an underived and inherent property, has, with the substance itself, a communicated and dependent existence.

What we mean then to urge, is this, that, unless the Sceptic is to beg the question, he has no more right to infer from man's experience of the universality of gravita-

tion, that matter moves, or is moved, by an uncommunicated inherent power, than the ignorant African to attribute the motion of the watches to the *motive power* of the wheels themselves. The one draws his conclusion from the experience of a day, a week, or a month, the other from the concurrent testimony of ages, each seeing no beginning—no probable termination of the motions; but no experience, short of eternity, can prove inseparable and necessary connection between any two phenomena; our experience, therefore, cannot furnish sufficient ground for asserting that matter possesses inherently and independently the power of gravitation. Experience can only inform us of what is, or has been, not what necessarily and eternally must be.

2dly. No property or quality can be considered, as inherently and inseparably belonging to a substance, if the substance can be conceived, as existing without it. The only quality without which matter is inconceivable, is extension. This then is the only attribute essential to its being.

Gravitation therefore cannot be regarded as an inherent and eternal property of material substance.

3dly. We know, that material substances tend to a centre, by a constant and certain law, but have no power to lessen, or stop, or accelerate their motion, unless in a certain and unalterable ratio, or to change its direction. Hence, it is evident, that in motion they are passive, and not active. If no atom then can move itself by any active power of its own, what rational ground have we for believing, that it possesses an active power, by which it can move another atom?

But let us not confine our attention to this single property; let us extend our enquiry further, and examine, whether it can be rationally assumed as a fact, that matter possesses any active power whatever, inherently and independently.

When we speak of the powers of gravitation, attraction, repulsion, vegetation, and so forth, we are often betrayed into misconception and error by mere names, confounding power with fact, and the clas-

sification of an event with the assignment of its cause.

When we say, that a stone falls by the power of gravitation, we are prone to conceive, that we have explained the phenomenon; whereas, in truth, we have merely expressed a fact, and reduced it, by a general term, to the class of appearances, to which it belongs. The name no more accounts for the fall of the stone, than the word *pen* accounts for the existence of the instrument, with which I write. We call gravitation a power, and we are apt to reason, as if matter possessed some inherent energy, some active and independent property. Now, an attentive examination of surrounding nature, with a little reflection free from prejudice, will convince us, that the physical world does not exhibit a single instance of active inherent power, as belonging to any material substance; all that we observe being a regular and uniform conjunction of certain antecedents and certain consequents—a series of phenomena preceded and followed by another series of phenomena. How, or by what agency one follows another, we are utterly igno-

rant; the phenomena themselves give us no information; and to assert an essential and independent power in the antecedent to produce the consequent, is to affirm that, of which we have not one tittle of satisfactory evidence. The conjunction we see, but its cause is invisible. Of necessary connection, or of innate energy in matter, to effect a change in matter, the Sceptic, without begging the question, cannot offer even the shadow of proof.

The philosopher professes to investigate causes; but all his discoveries must terminate in facts, which it is his province to examine, to compare, and to classify. The *arcana* of causation elude his research. Nor is it necessary to our happiness, that the mystery should be revealed. It is sufficient for us to know the established order of events,—that certain previous circumstances are followed by certain results, or, as it is commonly expressed, that similar causes produce similar effects. These conjunctions it is his business to ascertain, to compare, and to generalise. He may investigate the rule or ratio, according to which any particular phenomenon presents

itself, and he may designate this by the name of *law*. Thus we speak of the law of gravitation, of reflection, of acceleration, and say, that attraction is directly as the quantity of matter, and inversely as the square of the distance,—that rays of light are reflected, making the angle of incidence equal to the angle of reflection, and that the spaces through which bodies descend in a vacuum, are as the squares of the times; but all this amounts to nothing more, than a simple statement of facts, signifying the modes, in which they take place. The law does not determine the facts, but is deduced from their existence. It is not statutory, but declarative. Let us prosecute the investigation of causes to the extreme limit, we must ultimately rest on facts. These are the only objects of our perception. When we assume therefore that the phenomena furnish sufficient evidence, that matter effects them by any innate powers of its own, we indulge in rash and unwarrantable hypothesis.

Again, ignorant, as we are, of the essence of matter, we are not justified in ascribing

to it any inherent and uncommunicated properties. We know nothing of it, but as it affects our senses. It exists; but it is known only as perceived. Its qualities and properties, as producing in us certain sensations, are the only objects of our perception. These properties, therefore, are purely relative, not absolute. If any quality can be regarded as essential to matter, it is extension; and yet we know, as has been already observed, that, though matter without extension would be to us inconceivable, our belief even in this quality is not wholly free from doubt and difficulty. It is represented, as composed of atoms; but where are they to be found? For, either every atom or elementary particle is itself infinitely divisible, as having extension,—and thus there are no primary particles, of which matter can consist; or, if the atom or particle be not divisible, it can have no extension and no parts;—and thus matter, having extension and parts, is composed of that, which has no extension, and no parts. Here seems a manifest absurdity. Thus, the very attribute,

which is essential to our conception of matter, presents a difficulty, which it baffles human ingenuity to remove*.

Knowing then nothing of matter absolutely or in itself, acquainted with it only in relation to ourselves, are we warranted to affirm, that any qualities or powers, inherently and independently belong to it, merely because they affect our senses in a certain manner? Is man the only sentient and percipient being in the universe? The laws of matter are all reducible to the laws of mind. They are the rules, according to which certain sensations, perceptions, and thoughts are excited in us by external objects. Attraction, repulsion, extension, &c., are merely generic names of certain classes of these sensations and perceptions, as existing in us. The effect of every ex-

* It is contended, that to affirm a finite substance to be infinitely divisible is absurd. Is not a finite number infinitely divisible? Why may not also a finite substance? What is wanting to effect it, but infinite power? The Sceptic may deny its infinite divisibility, but he must be puzzled to reconcile his negation with the fact, that the smallest particle of matter must have extension, and whatever has extension must be made up of parts, and whatever is made up of parts must be divisible.

ternal impression is equally dependent on the subject impressed, as on the thing impressing. Had our natures been differently constituted, matter would have presented to us different qualities and properties. We repeat, therefore, that the qualities of matter being purely relative, and existing only as perceived, to assume that any of its powers is necessarily and inseparably existent in it, seems to us an unwarrantable presumption. How can the quality or property of any substance be deemed self-existent and independent, when the very existence of that quality or property depends on that of some other substance?

It is asked by the Sceptic, why we should seek for a cause beyond matter itself, for its qualities and properties. Why should we resort to the gratuitous hypothesis of a Deity, to account for the existence of those powers, which universal experience authorizes us to ascribe to it? To this it may be answered, that matter cannot be the cause of its own properties, any more than it can be the cause of its own existence. Of substance in the abstract we can form no conception; every individual is known

to us, as an assemblage of qualities; but the substances, if a *substratum* be admitted, have surely a different relation to their powers and properties from that of cause to effect—as different as that of antecedent and consequent from that of two simultaneous co-existents. Every cause must be prior to its effect. Did matter first exist, and then produce its own powers? What was matter before its properties existed? If we reject a *substratum*, and regard matter as an assemblage of qualities, these surely, without an absurdity, cannot be supposed to have been the cause of themselves. And, when the Atheist ascribes to matter active independent powers, and on this assumption erects his hypothesis, and constructs his universe, we contend, that, until he can produce clear and incontestable evidence, that matter possesses such active power, his argument must be dismissed, as a mere assumption. Power is strictly the attribute of a voluntary agent; and its exercise subject to his will. It is not an object of perception, but an inference of the understanding; nor is our notion of it acquired, as Hume supposes,

from the constant conjunction of certain phenomena, and the habit of passing, in imagination, from antecedent to consequent *. We may indeed thence derive

* It is not from a single example of sequence, but from repeated instances of the same antecedents being followed by the same consequents, that our notion of cause and effect is derived. "It is then," says Hume, "that we suppose some necessary connexion between them—some power in the one, by which it infallibly produces the other." . . . . . "This connexion, therefore, which we feel in the mind, this customary transition of the imagination from one object to its usual attendant, is the sentiment or impression, from which we derive the idea of power, or of necessary connexion." This explanation of the origin of this notion, we apprehend, is incorrect :—1st, Objects may be repeatedly, nay, even constantly associated in the imagination, which have not the relation to each other of cause and effect. 2dly, By *necessary connexion*, Mr. Hume, if he wrote consistently with himself, must mean *eternal and inseparable connexion*. Now, while we admit, that, without a certain uniformity in the phenomena of nature, we should have no conception of power, or of the relation of cause and effect, we deny, that any accumulation of similar results from similar causes can justify the conclusion, that they are necessarily and immutably conjoined. From the fact of constant conjunction we are not warranted to infer necessary and unalterable connexion. This may be the conclusion of Mr. Hume; but we deny its legitimacy, until it shall be proved, that a temporary experience is a conclusive argument of an eternal and necessary fact. 3dly, It does not appear

our notion of cause and effect; but our notion of power is different from our notion of cause, the former being apprehended as that, by which the latter is understood to produce its effect.

to us, that constant conjunction can alone give us the idea in question. If the human mind were so constituted, that we had no consciousness of our volitions being accompanied with certain effects, we should have no notion of power. The heart beats, the blood circulates, and the liver secretes,—one antecedent is followed by its consequent with the utmost regularity; but would a knowledge of these processes, if we had no consciousness of voluntary agency, and no perception of its effects, ever give rise to this conception? The inferior animals know, or at least act, as if they knew, that similar causes produce similar effects, but they have no notion of power. It is an abstraction, of which they are incapable. What gives occasion to this notion must be distinguished from its cause, —the latter must be sought for in the constitution of the human mind—in the knowledge of our ability to effect change. In certain circumstances we remember, that we effected certain changes; and in similar circumstances, we believe, that we have power to produce similar changes. A palsied limb, it is objected, may disappoint our expectation; we cannot therefore be conscious of power. True; but this alters not the principle, in which the notion of power originated, namely, in the past experience of our volitions, and their actual consequences. If we were not capable of consciously *willing* and of *producing*, but merely of *observing* changes, would it be possible for us to form any notion of power? We apprehend that it would be utterly impossible. Power then is the attribute of a

But though active power, in the strict and philosophical sense of the terms, be predicable of none but a voluntary agent, we are aware, that they are employed in a more enlarged acceptation, and figuratively used to signify that, by which any change whatever is effected. We accordingly speak of the powers of matter. But this language, though metaphorically admissible, is metaphysically incorrect. The conceptions and language of the poet, who animates the whole of physical nature, are not to be received for the truths of philosophy. The physiologist may assume a similar licence, and ascribe power and volition to inanimate substances; but he must be aware, that, in the exercise of this liberty he is substituting the metaphors of fancy for the simple and philosophical language of reason. The electrician may state as a physical fact, that the electric fluid *prefers*, for a conductor, metal to wood; but he understands at the same time, that he expresses himself figuratively, and that the

voluntary agent; and the notion of it derived from the knowledge of our ability as voluntary agents to produce change. "Solicitatio, et nisus sive conatus rebus solummodo animatis revera competunt."—*Berkley de motu.*

fluid can neither *prefer* nor *reject*, having no freedom of choice. When we perceive the fibres of a tree, winding through the soil round various obstructions, and pushing with all the seeming dexterity, which intelligence would dictate, between bricks and stones, in search of nutriment, the phenomenon furnishes no better authority for asserting, that they have the *power*, or the ability, than they have the *sagacity* and the *will* thus to seek for food.

It is evident, that our notion of active power is derived from our own energies, as understanding and willing beings. Hence it follows, that the only intelligible and distinct conception, that we can form of power, is, as Dr. Reid * has observed, "that it is the attribute of a being, who can do certain things, if he wills," and that it can exist "only in beings, that are endowed with understanding, and capable of volition." It cannot belong to inanimate substance, though matter, like a tool in the hands of a machinist, may be made an instrument, subservient to the purposes of a

* Reid on the Powers of the Human Mind, Essay I. Chap. v.

Supreme Intelligent Power. This, then, being the only clear and rational notion, which we can form of power, we reject the assumption of the Atheist, as unphilosophical and false, that matter possesses any active power essential and independent.

The Atheist may reply, that he admits this to be the strict and metaphysical sense of the term *power;* but that it suffices for his argument, that the phenomena of nature proceed in a uniform course, certain antecedents being regularly followed by certain consequents, that these phenomena have existed from eternity, and that we ought not to look beyond matter for the causes of those effects, which we perceive, that it produces. A little attention, with a reference to the observations already offered on this subject*, will serve to convince us, that this argument is wholly fallacious. That the phenomena proceed in regular order, is granted; but, by what argument can the Atheist prove, that the constant conjunction of certain antecedents and certain consequents, proves their necessary and inseparable connection,

* See pp. 10, 11, 105, 115.

or that a limited experience of certain phenomena evinces their eternity? Can finitude comprehend infinity? Until he can demonstrate, that what is metaphysically a contradiction, may notwithstanding be true, and prove, that what now is, must have been from eternity, his argument must be dismissed as a palpable fallacy.

"We are not to look beyond matter for the causes of those effects, which we perceive, that it produces." But how has the Atheist learned, or by what reasoning can he shew, that the properties, which he ascribes to matter, are the ultimate, and not merely the immediate, causes of existing phenomena? It has been already observed, that the only rational conception of power, which we can entertain, is, that it is the attribute of a voluntary agent, and cannot, therefore, essentially reside in an inanimate substance. Hence the natural and philosophical conclusion is, either that the properties of matter are the communications of a Supreme Power, employing it as an instrument of His purposes, or that the whole phenomena of nature are the effects of the continual

agency of a presiding Intelligence. We smile at the girl, who talks to her doll, as if it heard and understood; and we excuse the savage, who scolds the knife, which has accidentally wounded him; and, our imagination being delighted, we forgive the poet, for attributing animation and perception to rivers, hills, and groves; but it is hardly pardonable in the philosopher, when he ascribes to inanimate substance that active power, which belongs to himself, and, as far as experience teaches him, can be the property of none, but a being capable of voluntary action.

If the preceding observations be well founded, it will follow, first, that the atoms, which compose our globe, were never in a state of quiescence, otherwise they must have remained for ever in that state, in the absence of a Prime and Intelligent Mover. Secondly, that we have no conclusive evidence, that they possess any active power, by which they could be from eternity in motion. Thirdly, It will be obvious, that to ascribe to matter any active independent power whatever, on which assumption the Atheist erects his hypothesis, is a

mere gratuitous assertion, a succession of changes being the only objects of perception, and a limited experience being utterly incapable of proving an eternal and necessary connexion. Until the Atheist can remove these objections, which we confidently affirm no ingenuity can accomplish, his hypothesis of eternal material powers, must be pronounced to be nothing but a palpable *gratis dictum*.

SECTION III.

The same Subject continued.

It is the doctrine of the Atheist, as has been just observed, to assert the eternity of matter, to invest it with independent powers, and to ascribe the phenomena of the universe to the concurrences of chance, or the agency of blind necessity. Now, were we to concede to the opponent every property and power, which he ascribes to matter as its own, and that, in the progression of ages, its atoms, rambling through infinite space, fortuitously concurred into

certain masses and forms, would the hypothesis of the Atheist be entitled to assent? Let us enquire.

To examine the various and discordant theories, which have been offered to account for the formation of our system, without the aid or intervention of intelligence, would be to exhaust the patience, if not to insult the judgement, of the reader. They are as fanciful and visionary, as the imaginations of their authors were wild and extravagant. In truth, were it not, that they have been gravely propounded by men of philosophical acquirements, and distinguished name, they might be consigned to silent contempt, as fit subjects of derision, rather than of rational and serious discussion. A few of these cosmogonies we shall briefly examine.

If we inquire how this globe of ours was formed, and set in motion, a philosopher tells us, with great gravity, that nothing is more easily conceived. He tells us, that after masses were once formed by the power of attraction, one of these bodies, impelled he knows not how, nor can he tell by what, impinging on the sun, struck

off our earth, and set it in motion round its axis; and that, by the combination of the centripetal and centrifugal forces, it necessarily acquired its annual motion round the sun. The hypothesis is repugnant to the known laws of matter and motion. A few words will expose its absurdity. By the law of gravitation, a body projected from a given point, and revolving round another body, must return to the point, from which it was projected. And, if we find a body revolving round a centre, we infer with certainty, that it was projected from some point or other in the orbit, which it describes. Hence it is evident, that our earth could not have been projected from the sun. The hypothesis involves a physical impossibility.

Buffon, though he attributed the existence of the sun to the creative power of Deity, seemed to consider the cometary and planetary systems to be the effect of accident. The former he supposed to have originated in an explosion of some star, in the neighbourhood of the sun; and that one of these comets, coming into contact with him, furrowed his surface, and separated

from him our earth, which was, in its primordial state, a liquid mass, and by attraction assumed a globular form; while, by the force of projection, and its gravitating property, it was at the same time urged into a curvilinear orbit. If the intensity of the solar heat is offered as an objection to this theory, as being irreconcileable with the possible existence of any animal or vegetable substance on this earth, the answer is, that our globe, though, in its original state, a liquid mass of red-hot matter, has been gradually parting with its caloric; and calculations have been made, how many centuries it would require, to cool down to a temperature, capable of sustaining its first organic productions*. And, that nothing may be wanting to expose the temerity of its author, and to render the hypothesis ridiculous, we are seriously told,

* If the earth is gradually cooling, the sun must also be losing his heat. But, if he has existed from eternity, as some Atheists maintain, his caloric must have been dissipated, before our earth was struck from him. Either the hypothesis is false, or the sun has not existed from eternity. If he had a beginning, can the Atheist, by any known physical causes, explain his origin?

that the assumed explosion took place about 60,000 years before the creation of Adam—that the mass required 2,936 years to lose its red heat, 34,270 to admit touch, and the remainder to fit it for the habitation of man. If such a fanciful and gratuitous hypothesis as this can be received as credible, is there any nonsense too extravagant, any proposition too monstrous, for human belief? The theory, if it merit the name, is not only physically impossible, but, were it even consistent with possibility, is wholly incapable of accounting for the phenomena. The *data*, observes La Place, from which we must investigate the causes of the primitive motions of the planets, are the five following facts: 1st. The motions of the planets in the same direction, and nearly in the same plane. 2d. The motion of the satellites in the same direction, and nearly in the same plane with that of the primaries *. 3d. The rotation of these different bodies and

* In correction of this error, it must be observed, that the orbits of all the satellites of the Herschel are almost at right angles to the plane of the ecliptic, and their motions retrograde.

of the sun in the same direction, as the motion of their projection, and in planes nearly the same. 4th. The small excentricity of the orbits of the planets, and their satellites. 5th. The great excentricity of the orbits of the comets. La Place acknowledges, that the hypothesis of Buffon may account for the first of these facts, but is incapable of explaining the other four *. It is hardly necessary, therefore, to observe, that it must be rejected as false.

A late physiologist of our own country †, who united in himself the rare combination of poetic genius with metaphysical talent, was inclined to adopt an opinion, somewhat similar to that of Buffon, and to believe, that the planets were thrown from the sun, by what he termed a *sunquake*, or solar explosion. One of these masses, he observes, as it would quit the surface of the sun with the velocity, with which the latter was moving, and with that acquired by the explosion, would, under the influence of these two forces, move round the common centre, in

* Exposition du Système du Monde, Book V. Chap. vi. note 7, fifth edition.

† Darwin's "Botanic Garden," vol. i. note 15.

the same direction with the sun's rotation. Aware, however, that the projected body must, by the law of gravitation, return to the sun, the author fancifully conjectures, that the projection might take place, at the precise time, when the sun was rising from a chaos, (a very fortunate coincidence for the author's cosmogony,) and that the planet might be prevented from returning by the attraction of other suns, starting from the mass (another very lucky coincidence) at the same period. As a poetic fiction, this hypothesis may be tolerated; delivered gravely as a philosophic theory, it is unworthy of a moment's attention.

But, if these hypotheses, as offered to account for the production and motions of our planet, should be dismissed as unphilosophical, and destitute of all claim to rational assent, the Atheist, not easily discouraged, presents us with another of a humbler character. Finding it would not answer, to assign the origin of our earth to the solar orb, he ascribes its production to the fortuitous conglomeration of atoms, and supposes it to have been put in motion, and set a spinning by the impulse of some other

mass, impinging against it. Let us bestow a few moments' attention on this speculation.

It is a fact, known by experience, that, if a body, proceeding in a straight line, be deflected from its course, or if a quiescent body be set in motion round its axis, the direction of the impulse must not pass through the centre, otherwise it will move forward in a straight line, and have no rotatory motion. It is known also that a sphere of soft or fluid matter, by revolving round any axis, will assume the form of an oblate spheroid. Accordingly we find, that the equatorial axis of our globe exceeds the polar, by about twenty-five miles, and that the equatorial spaces are higher than the polar. Hence the water in the torrid zone, if not prevented, but left to its free course, would descend from its bed towards the north and south poles, and inundate the northern regions.

Either the rapidity of the earth's rotation might be so great, that the equatorial region might be inundated, and every loose substance thrown from its surface, the centrifugal over-balancing the centripetal tendency; or the rotation might be so

slow, that the waters would flow to the polar regions, and leave the equatorial quite dry *. Now, it is matter of demonstration, that a rotation of twenty-three hours and fifty-six minutes, which is the time, that the earth takes to revolve round its axis, is precisely that, which will exclude these two evils. How was an adjustment so necessary to the welfare of our system effected? Those, who are ever anxious to dismiss the necessity of a Divine Intelligence to this and similar aptitudes of means to ends, and are always ready to favour us with assumptions and hypotheses, assure us, that the phenomena are all explicable, on the supposition, that the impulse took place, in a line of direction, and at a point distant from the earth's centre $\frac{1}{157}$ of the diameter †. How easy is it to assume facts, and to construct theo-

* It is calculated, that, if the earth were to revolve round its axis in the space of about an hour and a half, or eighty-four minutes, every body on its surface at the equator would lose its weight; and if the velocity exceeded this, all bodies lying loose on the surface would be thrown off.

† Robinson's Elements of Mechanical Philosophy, pp. 256—524.

ries. Were difficulties to be explained, and questions decided by fanciful suppositions, what difficulty might not be removed, what question might not be solved? Let it be conceded, that the point of impulsion was, what is here stated, and that the existing phenomena necessarily followed. Are we to rest here? Is there not a question, which to every reflecting mind naturally presents itself, and which the advocate of nothing but blind mechanical agency cannot evade? The question is, how did it happen, that out of the numberless points, at which the impact might have taken place, the impinging mass should hit exactly that point, which the beneficial effect required? We ask further, how did it happen, that the impelling mass produced, out of numberless other possibilities, exactly that velocity of rotation, which averts the evils, which would otherwise have ensued? So numerous are the chances against either of these events, that to ascribe their concurrence to any other cause, than intelligence and design, seems irrational in the extreme. Accident cannot account for them.

But not only is the hypothesis contrary to all probability, the fact, if conceded, being considered as a matter of chance ;— it is also irreconcileable with existing phenomena. If such an impulse, as the hypothesis presumes, had ever taken place, it must have left visible and permanent effects behind it. The surface of the globe must have suffered injury ; it must have been defaced and disfigured, vestiges of which must still have remained*. If the earth, at the time supposed, had been in a fluid state†, to the depth required, no force so impressed could have produced its present motion ; and if it had been in a solid state, the effects of such a concussion must have been still visible. Whichsoever of the alternatives is adopted, the hypothesis is either false, or impossible. And, if we extend our view to some other parts of the planetary system, we shall

* Robinson's Elements of Mechanical Philosophy, pp. 256—524.

† That the surface of the globe, when its rotatory motion commenced, was to the depth of some miles more or less fluid, seems morally certain, from its spheroidal figure. It is the opinion, indeed, of some geologists, that it was wholly in a state of fluidity.

find, that the hypothesis is incapable of explaining the phenomena. "For, it is not enough," says Professor Robinson, "that Jupiter received an impulse, which impresses both the progressive and rotatory motions. His four satellites must receive each separately an impulse of a certain precise intensity, and in a certain precise direction, very different in each, and which cannot be deduced from any thing, we know of matter and motion."

Another hypothesis, less extravagant than any of the preceding, has been offered to account for the production, not only of the planetary and cometary system, but of the whole "celestial host." It is conjectured, that the universe originally consisted of nebulous matter, or "substances which give out light, whatever may be their nature, or whatever different powers they may possess;"* that this matter was highly attenuated, and that out of it stars, planets, and comets have, by gravitation and condensation, been gradually formed. In order to account for the rotatory motion

* See Herschel's Paper on "The Construction of the Heavens," in "The Philosophical Transactions," 1811.

of the heavenly bodies, it is supposed, that, when a nucleus was once formed by attraction, the revolution round its axis was produced by a greater number of these attenuated particles continuing to press on one side of it, than impinged on the other. While this afflux of particles continues, it is said, that the body assumes a cometary appearance, or at least is surrounded with a *coma*, or hairy envelopement, and when the condensation is completed, it then becomes a star. If a very high degree of condensation take place, and a sufficient consolidation is produced, to prevent the penetration of light, the body then assumes a planetary appearance.

La Place has advocated a similar hypothesis, respecting the primordial nature of matter, as consisting of nebulous particles highly attenuated; and while he excludes the agency of intelligence in reducing it to its present form, is astonished, and regrets, that Newton should have considered a wise and presiding Power to have been necessary for the accomplishment of a work, which attraction alone is capable of

effecting*. In the 5th edition of his "Exposition du Systême du Monde," he has unfolded his theory, and attempted to reconcile his ingenious conjectures with the phenomena of the heavens, and to explain the mode of their production. The following brief sketch of his cosmogony, given by Chevallier, in his "Hulsean Lectures," will exhibit to the reader its leading principles. It assumes, as has been said, that the material universe existed once in a nebulous, and highly attenuated form—that, by the power of gravitation, its particles being put in motion, were collected about different centres, and that one of these aggregations became the body of the sun, "that the several nebulous masses, of which the universe would

* *Exposition du Systême du Monde. Brussels edition.* p. 522. It is but justice to the author to observe, that he offers his hypothesis to examination, in terms of modesty and diffidence. "Je presente avec la defiance, que doit inspirer tout ce qui n'est point un resultat de l'observation, ou du calcul." He acknowledges also, that chance cannot account for the planetary phenomena: but resolves all into a mechanical cause, acting without intelligence, as if one ignorant cause were more capable of accounting for order and utility, than another.

thus be composed, might each have acquired a rotatory motion, under certain restrictions, without the action of any other force, than the mutual gravitation of their particles, and that the matter of the sun thus acquired a motion about its axis." It assumes, "that the nebulous atmosphere, diffused round the central nucleus, which formed the body of the sun, was condensed, and left, at its successive limits in the plane of its equator, zones of matter"—that these would generally be separated into various parts, and as they would previously be "moving with such a velocity," that the centripetal was precisely equal to the centrifugal force, they would continue thus to revolve, until the separation into various parts took place, when by mutual gravitation these parts would be collected into spheres, each having a rotation about its axis, in the same direction with its motion round the sun. Hence the planets would be formed; and, it is farther assumed, that each planet "being surrounded with a nebulous vortex, and this gradually condensed, the satellites would be formed from the primary planets by the same pro-

cess, as that, by which the latter proceeded from the sun." This is an outline of La Place's theory; but whatever ingenuity may have been displayed in its construction, it is nothing but conjecture, and is proved to be incapable of explaining several known and important facts. It is demonstrable, that if the matter, which composes the earth, were expanded, by a mutual repulsion of its particles, to a sphere equal in diameter to the moon's orbit, and if the relative density of the particles remained unaltered, the moon could never have acquired her present velocity, for that the velocity of the earth's equator, at the time of her formation, would be nearly one hundred and thirty times less than the lunar, as it now is*. It is certain also, as it is remarked by the same writer, that the motions of the satellites of the Herschel, being nearly perpendicular to the plane of the ecliptic, are directly at variance with La Place's theory. One and the same cause cannot, in similar circumstances, produce contrary effects: nor

* Chevallier's Lectures, p. 67.

can any theory be received as satisfactory, which fails to explain all the phenomena*. That offered by La Place is not only irreconcileable with some of the planetary motions, but is opposed by several insurmountable difficulties. His theory therefore, being at variance with the phenomena, must be rejected as false. But it is also inconsistent with itself, and with physical possibility, if the laws of matter be immutably the same.

1st. It supposes, that the universe was once composed of nebulous particles highly attenuated, and that these, diffused through the immensity of space, were, by the power of gravitation, set in motion, having previously been in a state of rest. This we pronounce to be manifestly impossible. If the particles had ever been in a state of quiescence, they must have remained for ever in that state. By what power were they to be moved? Not surely by gravitation; unless on the supposition, repugnant to the Atheistic hypothesis, namely, that this is not an innate

* See "Chevallier's Hulsean Lectures," p. 68.

property of matter, but the communication of an Intelligent Supreme Cause; for, if the power were innate, that power must have acted from all eternity; whence it is evident, that the nebulous particles could never have been at rest. One or other of these alternatives must be true. Either matter was once at rest, as the hypothesis of La Place presumes, on which assumption it follows, that gravitation is not an innate power, and that the hypothesis of the Atheist is false; or gravitation must be essential to matter, on which supposition, it is clear, that no period can be named, at which matter was not in motion. From this dilemma there is no escape.

2dly. It would appear, if we can rely on the accuracy of the description given to us of this nebulous matter*, that the processes of consolidation and condensation are still going on, in the regions of space, and forming other worlds, and other systems. Now, if matter be eternal, and gravitation eternal, it may be asked, why are not all these processes completed? If millions

* See "Herschel's Paper," as before cited.

of millions, multiplied by millions of millions of ages, be insufficient for this purpose, let millions of millions indefinitely be added; there is no limit to eternity. In duration without bounds, why are not these processes perfected? Will it be said, that the universe is infinite? Be this granted; what is within our observation is limited; why was not a finite part completed in eternity? Either matter had a beginning, and its gradual modifications are under the direction of a Supreme Intelligent Power, or it has been from eternity, on which supposition, the consolidation and condensation of the nebulous matter must have been completed.

3dly. Were we to admit La Place's theory to be a complete and satisfactory solution of the phenomena, it would prove nothing favourable to his conclusion, nor in the least degree shake the stability of our faith. Let the existence of this primordial nebulous matter be conceded, let the aggregation of its particles by gravitation be allowed, and let the progress of the formation and motion of the heavenly bodies be, what he represents, the question

would still be, whether the process be conducted mediately, or immediately, by a directing Intelligence, or be the agency of a blind and senseless necessity. The decision of this question must rest on the nature of the effect. If substances acting by their properties on other substances, produce results distinguished by neither order, nor beauty, nor utility, we should, in such case, be justified in concluding the absence of an Intelligent Cause; but, if we perceived the most astonishing and beneficial effects produced, we should infer, with certainty, a benevolent and intelligent Author. It is one thing to investigate the order of phenomena, and quite another thing to know the power by which they are produced,—to perceive the mode of production, and to ascertain its cause. The process, by which a bird is formed in its shell has been narrowly watched, and every step in its progress from embryo to maturity ascertained, but this amounts to nothing more than a mere acquaintance with the facts; the cause, whether ignorant or intelligent, must be learned from the character of the effect, with the aptitude

of the means, by which it is produced. Now, if we actually witnessed the production of a planet,—if we could trace the process by which it is formed, and perceive the mechanical means, by which it is moved, as clearly as we observe the animal process, to which we have alluded, would a knowledge of the facts justify us in concluding the absence of a presiding and directing Cause? Or would the similarity of these to other known facts warrant us, in ascribing them to a senseless necessary agency? Should we not here, as in every other instance, judge of the cause from the nature of the effect, and the means of its production? Were it granted, then, to the Atheist, that matter existed once in a nebulous state, and that its particles were aggregated, consolidated, and condensed into stars and planets, the concession would avail him nothing towards his conclusion, until he shall have proved, that to know the order of events, or the sequence of phenomena, is to ascertain the cause, that the constant conjunction of certain antecedents and consequents evinces necessary connection, and that order and re-

gularity must result from senseless necessity, and not from intelligence and wisdom.

SECTION IV.

Chance or Necessity incapable of accounting for the production of the Planetary System, and of the Animal and Vegetable Beings on this Globe.

LET us now proceed a step further. Let it be conceded, that matter existed from eternity, that it was in motion from eternity, that our earth was formed by the fortuitous conglomeration of atoms in the progression of ages, that the sun was formed we know not how, that all matter possesses essentially a gravitating power, and that some mass impelled, or gravitating, to our earth, and impinging against it, at the most fortunate point, impressed on it a centrifugal and rotatory motion, a thousand questions remain to be proposed, which it is impossible to resolve on the hypothesis of chance. Why is the sun a luminous body? Why is he not opaque, like the planets and comets? Can the Atheist explain by any known possible

combination of the material elements, how this extraordinary distinction was effected? He might have been, and reasoning from analogy, we should conclude, that he would have been, like the other bodies of our system, destitute of light and heat. Or, if all matter be assumed to have been, in its primordial state, nebulous, and to have been gradually condensing, how comes it, that, in an infinity of ages, this condensation is not completed, and the sun converted into an opaque mass? The planetary and cometary bodies are, in number, about 500*. We know that light and heat are distinct substances†. Now, how does it happen, or what was the chance, that it should happen, that the sun should not only unite in himself the two essential qualities of light and heat, indispensable to vegetable and animal life, but that he should be originally the only body out of

* The number of comets, belonging to our system, is not correctly ascertained. They have generally been supposed to be nearly 500.

† In speaking of caloric, the author has considered it, agreeably to the prevailing opinion, to be a material fluid. Several philosophers of eminence regard it as a mere quality, and not a substance.

500, that possessed these qualities? How came all the light and heat, which the planets and the comets superficially at least have, to centre in him, and that he should be placed in a situation to dispense them to all? His distance might have been such, as to scorch or inflame every substance by caloric, or lock up the earth, with every being on its surface, in eternal frost. Why is the distance such, as to be favourable to the sustentation of plants and animals? How came the moving powers to be so adjusted, as to produce, out of the indefinite number of different effects, a beneficial result? How came the solar rays to be infinitesimally small, so as, notwithstanding their immense velocity, to do no injury to the human eye? Why is the force of gravity such, as to balance the force of projection, preventing the earth from roaming in the immensity of space, or being absorbed in the solar mass? Why do not the perturbations, which gravity occasions in the orbits of the planets, go on increasing, until the whole of the system is deranged? Why is it so managed, as to correct, or rather preclude the evils,

which might be apprehended from its power? If matter gravitates by the necessity of its own nature, does it necessarily prevent the mischief, which it would necessarily produce? Does it foresee the consequences of its own agency, and correct them, before they have proceeded too far. Is irregularity introduced by chance, when irregularity is necessary? Or can there be a stronger evidence of wisdom and design, than a deviation from the ordinary course of things, whenever irregularity becomes requisite to the conservation and safety of the whole? Did the earth, knowing what beings it was to produce, adapt its soil, its heat, its water, its atmosphere, its various mineral and vegetable productions, to the necessities and comforts of these its offspring? Or did it, with all the wisdom of providential intelligence, adapt its progeny to these circumstances? Or, out of the numberless varieties, which might have taken place, either in respect to the earth, or its animal productions, was this adaptation the result of chance? How came it, that this earth is clothed with an atmosphere con-

genial and necessary to the production and support of organized beings? How comes it, that this atmosphere, composed of two substances singly deleterious, should, out of a thousand different proportions, which might have obtained, be constituted by them, in such proportion, as is suited to the sustentation of animal and vegetable life? Let any person, taking the common doctrine of chances as his rule, look at the improbability, that any one of these beneficial concurrences, out of the indefinite number of possible injurious combinations, should happen by accident, and let him next consider the extreme improbability, that all of them should result from chance, or an unintelligent nature, and he cannot fail to perceive, that it is as one to infinity.

It has been replied, I am aware, that a greater or less distance from the sun, a slower or more rapid rotation, a different commixture of the atmospheric gases, and a constitution, in other respects, dissimilar to that of our globe, might have been compatible with the existence of other organized beings, though unsuitable to the

present race of animal and vegetable productions. We have been reminded, that many astronomers and theologists have delivered it as their opinion, that other planets are inhabited, though some are far more remote from the sun than we are*.

It is answered, that we have no certain evidence, that they are inhabited, though analogy leads us, presuming the existence and power of an Intelligent Cause, to believe, that this is the fact; and if they are not inhabited, the argument falls to the ground. But, if the affirmative side of the question be adopted, our reasoning recoils upon the Atheist with tenfold force. For these beings have either been produced by a superior Power, possessing intelligence

* It is certainly possible, that the temperature of the other planets may be different from what we should naturally suppose, if we consider merely their distance from the sun. For the solar rays, by combining with *media* different from ours, may produce nearly the same temperature, the atmosphere or *media* of the other planets being so adjusted, as to compensate for the greater or less distance of the sun. But such adjustment requires intelligence.

to effect the necessary adjustments, as the Theist believes, or they must have been the creatures of accident, and blind necessity. The former alternative implies the existence of Deity; the latter is less credible than the hypothesis, in support of which it is urged. For, if the aptitude of means to ends, and particularly the mutual adjustment of senseless matter and organic beings on this planet, singly, be unaccountable on the hypothesis of chance or necessity, the difficulty or impossibility of accounting for this adaptation, is surely not diminished, but increased, by supposing it extended to the whole solar system. In the same proportion, in which the possibilities of chance are lessened, and the evidences of design multiplied, is the conclusion of the Theist confirmed. If one salutary result, out of an indefinite number, be scarcely possible, the existence of a hundred, or any given number, is still less possible. That other planets are inhabited is highly probable; that their organized beings have been formed by accident is utterly incredible.

I repeat, then, that the reference of the

Atheist to other planets, presuming in them a mutual aptitude of physical constitution and animal life, has a direct tendency to falsify his own hypothesis, and to confirm the doctrine of Theism; unless he supposes, that the senseless clod, on which he treads, possesses sagacity sufficient to assume such modifications, and mould itself into such forms, as to adapt itself to the constitutions of the organized beings, which it produces, or, conversely, their constitutions to its capacities.

But perhaps the Atheist may shift his ground, and reverse the argument. He may contend, that, if there are more than 500 bodies, belonging to our system, there was a chance, that one of them at least should be so constituted, as to be capable of sustaining organized beings. There was a chance; will the Atheist calculate it? Where the possibilities of failure are numberless, what is the chance of success, in 500 trials? If it were certain, that one of the 500 must be formed, like the sun, it would still be 499 against one, that he should be placed in the centre. But this is not the chief point. The main question

is, what was the chance, that any one of them should be so constituted? Let him calculate the probability, and he must perceive, that it is almost infinity to one, that such adjustments could not possibly have been the result of accident. And if it be almost infinity to one, that these and other adjustments could not have happened by chance, in a single instance, the improvement of that chance, by supposing 500 fortuitous bodies, must still be considered as little better than an evanescent quantity.

It has been contended, that experience proves, that matter actually does assume different forms, and exhibit different properties, according to the circumstances, into which it is thrown. This is granted; but does the Atheist therefore mean to affirm, that, if our earth had been a hundred times hotter, or a hundred times colder than it is, that, if it had been surrounded by no atmosphere, had been supplied with no water, and had been constituted in every respect differently from what it is, it would have produced animal beings adapted to its circumstances? Such a no-

tion as this, we should naturally presume, would be too monstrous to gain the assent of any rational mind. But what paradox is too extravagant, what dogma too absurd, for the Atheist not to affirm? It would seem, as if in contempt of reason, and in despite of experience, his only object were to astonish us, by the boldness and extravagance of his assertions. This notion has been maintained by a French writer of distinction in the school of Atheism *. But assertion is not argument. Has he proved, that the adaptations existing on this globe are the effects of an agency purely material, and not the ordinations of intelligence and wisdom? No. He assumes it; for we contend, that to know the order of phenomena, is not to know the cause. Has he proved *by argument*, what he very boldly affirms, that, if the constitution of the earth were entirely changed, the human race would give place to other inhabitants, suited to its new condition? No. He asserts it. Has he proved it *by experience?* Let him produce the facts. We have the

* Système de la Nature, 1e Partie, p. 84.

evidence of experience to shew, that the existing constitution of this planet is suited to the constitutions of its inhabitants, but we have not one tittle of evidence from fact, that if the constitution of the earth were changed, other inhabitants would be generated; or if they were, that the physical circumstances of the globe, and their constitutions, would be mutually adjusted. Were this possible, inorganic senseless matter would hold an equal rank, in the scale of being, with that of intelligence and wisdom. Yet these positions the Atheist assumes, as if they were indisputable truths, and as if new worlds, and new adjustments, were to him the familiar objects of every day's experience. That a wise and designing Cause, in whose hands matter is a passive instrument, obedient to His will, and conforming to His purposes, might adapt animal beings to any state of physical circumstances, or these to them, is a proposition, which will not be questioned. But, that brute inanimate matter should, by any powers of its own, give existence and sustenance to sentient beings, in circumstances, as far as we know, ut-

terly incompatible with all animal existence, is an assumption extravagant and incredible.

SECTION V.

The Hypothesis of the Atheist incapable of accounting for the origin of a single organic being.

LET us proceed one step farther. Let us suppose, that this globe was formed, impelled, and moved, by the extraordinary concurrence of fortuitous circumstances, that it was surrounded with an atmosphere, supplied with water, and furnished with light and heat, modified as they now are—let all this be supposed, how is the Atheist to account for the production of plants and animals? How does he account for the origin of man?

In attempting to solve this difficulty, one or other of these two hypotheses must be adopted. Organized forms must be supposed, either to have been produced in a state, physically perfect, or to have existed originally in *embryo*, and being thrown

severally into their proper *matrices*, in the revolution of accidents, to have been nourished and reared into a state of perfection. Let us examine the former of these hypotheses, and we shall find it liable to insuperable objections.

1st. The mature and perfect generation of any vegetable or animal, or its instantaneous production in full strength and vigour, is repugnant to the known agency of nature, admitting nature inherently to possess procreative powers. Her generative energies are progressive and slow, commencing with the small seed, or embryo, and gradually expanding its various parts, till they arrive at a state of full vigour and maturity. This is the *universal* process of nature. I say *universal;* for not a single exception has been, or can be, produced. Instead, therefore, of having any evidence, that nature is capable of producing a perfect plant, or perfect animal instantaneously, we have the most irresistible evidence for believing, that she is utterly incompetent to such formation. We have the testimony of universal experience against the hypothesis. Animals and vege-

tables, therefore, could not have been produced by nature in a perfect state.

It would be ridiculous, we presume, to reply, that in the Mosaic account of the creation, they are represented, as brought into existence in full perfection. This was effected by the power of an Omnipotent Intelligence. When the Theist speaks of nature, as creating or producing, he does not, as the Atheist, mean by the term, generative cause, or active, independent, physical power. He does not believe, that nature, as an active being, possesses inherent and uncommunicated properties, and that, through her own proper agency, she gives birth to animal and vegetable beings. By the term nature he means simply the mode, in which Supreme Intelligence operates, or the order of the universe, as established at the creation by Infinite Wisdom. He is therefore not chargeable with any inconsistency, when he supposes, that the mode of original production may have been totally different from that of successive propagation. There is no inconsistency in believing, that the Deity gave existence to man, in a state of

perfection, but ordained the species to be propagated and reared by slow and gradual advancement*. Nature, on the contrary, when considered as an active, generative cause, unaided by intelligence, or as certain properties essential to matter, must at all times act in the same manner, because it acts by physical necessity. Its mode of operation, if it can be said to act at all, must be invariably the same. Judging from experience, which is the Atheist's test of fact, we confidently assert that the productions of the earth, vegetable and animal, could not have been generated by it in a mature and perfect state. There exists not a shadow of reason for believing, that the first man, the first elephant, the first oak, were formed by nature in a state of perfection. Her gradual progress from embryo to maturity, which, without one single exception, is visible around us, by irresistible evidence leads to a contrary conclusion. It cannot, therefore, be believed, that nature, by any possible com-

* "Natura primum animalia perfecta formavit; deinde perpetuam legem dedit, ut continuaretur procreatione successio."—*Macrobius Sat.*, Cap. xvi.

bination, could produce the first vegetable or first animal in a state of maturity.

It may be observed, 2dly, That such a hypothesis is not only directly repugnant to the gradual operations of nature, as ascertained by universal experience, but is also irreconcileable with the acknowledged principles of probability, admitted in all our reasonings, respecting matters of fact.

The Atheist assumes the eternity of matter. He assumes, that it inherently possesses the power of gravitation, that its elements have therefore been in motion from eternity, and in the revolutions of ages have produced our globe, with the rest of the planetary system. Be it granted, that the elements of matter, after an infinite number of attractions and repulsions, and concussions, and revolutions and combinations, did undergo a variety of changes in figure, magnitude, and motion, and at last assumed the forms, by which, as planetary bodies, they are now distinguished. Let it be granted, incredible as the hypothesis is, that their mechanical constitution is thus explained. Is it consistent with the lowest degree of pro-

bability, that plants and animals were thus produced? Every form, into which the material atoms could be thrown, would be the result of chance, for the hypothesis excludes design; and is it credible, that these forms, all resulting from chance, would ever assume that astonishing regularity, which we observe, in respect to their figures, their motions, their relations and dependencies? Who blended into harmony the discordant elements? Order is one; disorder is infinite. Chance may indeed, though very rarely, form a figure somewhat regular. It is possible, that a blind man, by ten thousand experiments, might delineate something like a human hand, a human foot, a human head, or a human arm. And if chance should form correct resemblances of these several members, and of other parts also, what is the chance, that they shall be justly proportioned? What is the chance that they shall be arranged, each in its proper place? What is the chance, that he shall ever form a beautiful human figure? Supposing then, how improbable soever may be the supposition, that the bones, tendons, muscles, nerves, ab-

sorbents, veins, and arteries of the body, were all formed by accident, what was the chance, numerous as they are, that they should be all duly arranged? And, supposing, contrary to all probability, that they were properly formed, and fitly disposed, how was the structure to become an animated being? Is life the necessary result of organization? Quite the reverse. In opposition to the theories of some sceptical cosmogonists, it may be confidently affirmed, that no example of any organism can be produced, in which life did not previously exist. Organization is the consequent, life the antecedent. Let us suppose, that chance constructed all the wheels of a watch, and arranged them in proper order, did chance ever produce a watch in motion? The question needs no answer. How then could chance give origin to man, a being, merely physically considered, infinitely surpassing any machine that ever was, or can be, devised by human ingenuity? This leads me to observe,

3dly. That not only is the formation of man, in a state of perfection, irrecon-

cileable with the known analogy of nature, and repugnant to the acknowledged principles of probability, but also physically impossible, as far as we can form any judgement on the subject.

We shall admit, that all matter is essentially the same; how was a perfect man, or indeed any animal being, to be formed out of materials, whose qualities and properties, antecedently to this formation, were specifically different from those of any animal substance? We know of no instance of the formation of animal matter, but through the medium of an animal being. And, as no animal, by the hypothesis, existed, let the Atheist explain to us the process, according to any chemical or mechanical law, by which animal matter was generated without the aid of animal substance. "Brute matter", says Voltaire, "may be animalized. Milk, bread, and wine may be converted into the substance of a man, having life, motion, and sensibility." This is true; but to what purpose is the remark, as applied to the question of man's origin? Can this transmutation be effected, but by the medium of

animal operation? Is not the previous existence of an animal necessary, in order to produce the change? Voltaire, instead of telling us, that these substances may become sensitive, and capable of self-motion, by being animalized, should have first told us, whence the animal originated, by whose mediate agency this change was effected; or, he should have shown, by some positive fact, that the assimilation may be produced without the intervention of an animal organism. To say, that brute matter may be animalized, is to state a fact; but the fact serves not the purpose for which it is stated. It presupposes the existence of the very thing, for whose origination it is intended to account. I am aware, that though the doctrine of spontaneous generation is now generally exploded, some experiments have lately been made, which appear to favour the hypothesis, that vegetable may, by certain means, be converted into animal substance, without the assimilating aid of an animal being. The accuracy of the conclusion, however, has been disputed; and, if just, it would not serve to remove the obvious

impossibility of man's original formation in a perfect state. The production simply of animal atoms differs widely from the organization of a perfect and mature human being. And, if man were not perfected at once, but formed in parts of animal matter, in whatever manner produced, the organs of life, sense, and motion must have almost instantly perished by decomposition, unless all were united, immediately after formation, into one harmonious whole. The structure must have been effected at once, or not effected at all.

But, were all these difficulties, not to say impossibilities, dismissed, insuperable others still remain to oppose the hypothesis of the Atheist. Let us suppose man to have been formed instantaneously perfect, and in a state of full maturity; he must, if he had been the production of chance or necessity, have perished almost immediately after his formation. How was his animal frame to have been supported? Did he know, that it required aliment for its sustenance? He came into the world, susceptible of pain and pleasure, but totally ignorant of his necessities, and equally

unacquainted with the means of supplying them. He feels the pain of hunger and thirst. Does he know the cause? or is he acquainted with the means of relieving them? He is as ignorant, that the fruits of the earth would satisfy his hunger, or the water of the brook quench his thirst, as the new born babe. And, if he knew, that they would answer these ends, how does he know the mode of administering them? How does he know, that his food is to be received by the mouth, masticated by the teeth, and transmitted to the stomach? And if he knew all this, who teaches him, or how does he know, to put the appropriate muscles in motion, when he is ignorant even, that a muscle exists? To refer us to nature, is to ascribe intelligence to a name, or to an abstract conception. To tell us, that he is taught by instinct, is not to remove, but to shift the difficulty. Instinct implies something implanted*.

* "Instinctus est impulsus causæ cognoscentis; sique ratione fit propter finem, est causa rationalis. Quapropter sive participent entia rationem propriæ essentiæ inditam, sive ab alio rationabiliter regantur, utroque modo est ad primam rationem, primamque artem, sapientiamque fontalem perveniendum."—*Campanella.*

By whom is it implanted? Or we will dismiss the name, though offered by the Atheist, lest we should seem to beg the question; and we observe, that an animal acts either with knowledge, or by knowledge. If *with knowledge*, implying an acquaintance with means and ends, how can it be acquired without experience? Its existence is impossible. If *by knowledge*, which implies an ignorance of means and ends, then that knowledge is not his own; and must be referred to an Intelligent Author, acting in him, either mediately or immediately. In short, if there is knowledge, it must be either acquired, or imparted. If the former alternative be impossible, the other necessarily follows. No truth then can be more evident, than this, that, if man had been formed fortuitously, he could not have been sustained fortuitously, but must have perished, almost as soon as he came into existence. If chance could account for his formation, it cannot possibly account for his preservation. This argument alone is conclusive against the hypothesis of the Atheist.

It is then nothing but idle and arrant

trifling in Mr. Hume, to tell us, that with a finite number of elements, all possible combinations must take place in eternity; insinuating, that man might have been thus produced, and that "the continual motion of matter, in less than infinite transpositions, must produce ultimately order and regularity." If we had only to account for mere combinations, the observation might be allowed to have at least the merit of relevancy. But something more is to be accounted for, than mere arrangement. We have to explain, how life, sensation, and intellect originated. No assemblage of atoms, though they should assume, by chance or necessity, the shape of a man, could form a sentient and intelligent being, any more than a human creature can be produced, when the statuary has chiselled his block from the marble.

SECTION VI.

The same Subject continued.

LET us now examine that hypothesis, which maintains, that the earth, in its primeval state, was possessed of a generative power, that it contained the seeds of plants and animals, and that these, when thrown accidentally into their proper *matrices*, were expanded from embryos, and gradually grew to full maturity. Can it be necessary to expose the falsity of so wild and ridiculous a hypothesis? It is not only destitute of evidence, but repugnant to the testimony of physical facts. In the first place, it may be asked, if there be any *matrix*, with which we are acquainted, except the *uterus* itself, capable of fostering the sperm of a human organism? How then was this sperm, supposing it, in utter repugnance to all physical laws, to have had an existence, antecedently to all animated being, to be thrown into a *matrix*, which had no existence? This we leave to the

Atheist to explain. But it has been asserted, that, though nothing now, but the maternal womb, is capable of preserving and fostering the sperm of human being, the earth, in its primeval state, may have possessed a conservative and nutritive power, by which animal seeds were preserved, and vivified, and that, the earth being impregnated with these, they became, when thrown into certain favourable situations and circumstances, animated beings, much in the same way, as animalcules are generated in certain substances in certain states *. How degrading to our nature is such a hypothesis! Wretchedly debased indeed must be the soul of that man, who can reconcile himself to assimilate his origin to that of the mite, or the maggot. A hypothesis so abhorrent to our feelings is not likely to gain assent. But let us listen to reason, and not to feeling.

The hypothesis is mere assumption, unsupported by the testimony of a single fact. We have no evidence, nor can it be conceived as possible, that the sperm of

* Systême de la Nature.

many inferior animals, admitting it to have existed, could be fostered into life and motion by any other means, than uterine gestation; much less can we conceive, that a human being could be reared to a state capable of supporting itself, in any other way, than by the fostering care of maternal affection. Let the Atheist explain how it is to be effected. But waiving this apparent impossibility, we may pertinently ask, what proof can the Atheist produce of the existence of any animal seed, previous to the formation of any animal being? To say, that they were coeval with the existence of matter, is a gratuitous assertion. Where have we an example of the existence of an animal or vegetable seed, not shed by an organized being? To tell us, that these sperms were the accidental productions of elementary particles, fortuitously collected, is to mock our understanding with a hypothesis, equally absurd and gratuitous. Be it granted, that all matter is essentially the same, and that animals and vegetables possess, what is termed an assimilating power, of converting other substances into vegetable and animal mat-

ter. Do we know a single fact, which can lead us to believe, that either earth, air, or water, or any combination of material elements, can produce an animal sperm, without the intervention of animal organism? The hypothesis, therefore, by which it is maintained, that animal seeds may have existed in the primeval state of our globe, and that these may have been cherished into life, action, and maturity, by certain fortuitous circumstances, is a mere fanciful assumption, not only unsupported by argument or fact, but undeniably repugnant to the laws of generation, as ascertained by uniform and universal experience. Nature exhibits no such mode of organic formation—no other mode, by which the embryo or seed can be generated, than by the medium of an animal or vegetable substance.

We would observe farther, that, as far as experience teaches us, no being can be produced by another inferior to itself. If the mere elements of matter had been the original beings, devoid themselves of intelligence, they could not have generated an

intelligent being. Intelligence must be produced by intelligence: it cannot be the offspring of brute matter. We have no example of a sentient being, produced by any but a sentient being. It amounts to a physical impossibility, that a creature like man, endowed with moral and intellectual powers, and so curiously formed, that his nature surpasses his own comprehension, could have been formed by brute and senseless atoms. Hence we may conclude, as will hereafter be shewn, that matter was not the first of beings, and that an Intelligent Cause was the author of its existence.

It is vain to urge, that the emersion or extrication of a new world from chaos, is a singular event, and that we cannot therefore infer from the operations of nature, as she at present conducts them, what were her primordial properties, or how much more prolific her primeval powers were, than they are at present. Be it so. Knowing nothing of such extraordinary powers, having no evidence that they ever existed, by what authority does he, who

offers the hypothesis, presume to say, that nature ever possessed such procreative properties, as to produce organic beings by any other means, than those by which they are now generated? *We* have the authority of experience for our description of her energies; *his* hypothesis rests on mere conjecture and possibility. *We* reason from what actually is; *he* from what possibly may have been. Let the Sceptic adduce an example of Nature now possessing any of those prolific faculties, which he presumes to ascribe to her in her earlier years, or let him, by any satisfactory evidence whatever, prove, that she ever did possess them, and his argument may be acknowledged to have some validity. Till then, it must be pronounced nothing but a mere hypothesis—mere assumption and conjecture.

Before dismissing this subject of discussion, there are two questions, which suggest themselves, and which may be proposed, in passing, to the consideration of the Sceptic. If nature, by one extraordinary concurrence of circumstances, had pro-

duced the whole of the vegetable and animal creation—if, to speak in figurative language, she had reserved herself for this singular effort of fecundity, how comes it, that she provided so effectually for the propagation of her offspring? Or, let us drop the figure, and ask, in plain terms, if accident had produced plants and animals, could accident also have produced the means, by which they still continue to be procreated? Is it not probable, if wisdom had not presided at their formation, nay, is it not certain, that without those instincts and powers, with which they are now furnished, they would have perished for ever in one generation, the random effects of a hapless chance, or blind necessity? If Nature provided for their propagation, Nature must be possessed of foresight and intelligence; for without intelligence, this provision seems utterly incredible.

Again. If Nature ever possessed this procreative power, and if animals of various kinds were generated by the mere properties and qualities of matter, how does it happen, that out of the immense num-

bers, which would have been fortuitously produced, no species of beings are found, with a superfluity, a deficiency, or an incongruity of organs,—quadrupeds, for example, with two or more heads, birds with one wing, or with two unequally balanced, animals with three or five legs, human beings without eyes or arms, or unprotected by a skin, and numberless other hideous malformations? Why do we not find animals generating their kind in situations, where their existence might be possible, but ill adapted to their nature? If chance had governed, and intelligence had been excluded, is it credible, that out of the innumerable fortuitous formations, which must have resulted, multitudes of such monsters would not have been generated? Nay, we would ask, if wisdom and benevolence had no share in the production of the animal creation, why do we not find tribes of beings so formed, that their organs are sources of pain, that they live only to suffer, that they have appetites, for which no gratification is provided, and that, by the necessity of their nature, they perpetuate their species, procreating be-

ings, from the very sight of which, writhing in pain, human nature would recoil with horror?

Can the absence of such beings be ascribed to chance, or to necessity, or to any unintelligent cause whatever? If chance or necessity, which imply the absence of that wisdom, by which causes are either ordained or regulated for the production of beauty, harmony, and utility, had been the primary agents in the formation of animal beings, many such wretched examples of deformity and suffering must have been produced. They exist not; and their non-existence cannot rationally be attributed to any other cause, than the ordination of an Intelligent and Benevolent Author.

It would appear, then, that were matter possessed inherently of every mechanical and chemical power, which the Atheist assumes, granting it to have the properties of attraction, repulsion, vegetation, and animalization, as they are now exhibited, they are wholly incapable of accounting for the production of a single vegetable, or animal substance. The artisan knows the qualities and properties of the bodies, on

which he is to operate, their hardness, their elasticity, their gravity, their ductility, their fusibility, and their flexibility; but will these properties, without his ingenuity, ever construct a machine? Is not his skill necessary to render these properties subservient to his purpose? The Atheist knows this, and yet he believes, that the properties, which he attributes to matter, might construct the universe, and form man, physically considered, the most complicated, the most delicate, and the most wonderful of all machines. He believes, that senseless atoms can govern their own powers, and, without intelligence, arrange themselves into the form, and invest themselves with the faculties, of a sentient and intelligent being. Is there any paradox or absurdity, which he may not believe?

SECTION VII.

The hypothesis of Hume, referring the phenomena of the universe to a principle of order, examined.

THE beauty, regularity, and utility visible in nature, indicating the agency of a cause, less capricious and more uniform in its operations, than chance, some Atheists resort to another ground, and resolve the constitution of our system into a principle of order. "Were I", says Hume, "obliged to defend any particular system of this nature, (which I am never willing to do,) I esteem none more plausible, than that, which ascribes an eternal inherent principle of order to the world, though attended with great and continual revolutions, and alterations. This at once solves all difficulties."* Yes, Mr. Hume, and just as satisfactorily, as if you had told us, that the types, which printed this sentence of yours, had formed and arranged themselves

* Hume's "Dialogues concerning Natural Religion," vol. ii. p. 479.

by an "eternal and inherent principle of order." You would cut the knot, though very unphilosophically, which, by your own hypothesis, you are unable to untie. "Did a principle of order," says Paley, "ever form a watch?" The question is pertinent, and with this question the absurdity might be dismissed. But let us examine this speculation.

A principle of order! Nothing is so convenient to the metaphysical disputant, as the employment of words in common use, which are not well defined, or not sufficiently understood. No precise idea being annexed to them, they perplex an opponent, and serve also to cover ignorance. It is far from being an unusual thing for a controvertist to talk fluently of principles, when he means nothing, and communicates nothing. Let us inquire into the signification of the term in question, and we shall immediately perceive, that this other hypothesis either resolves itself into a mere truism, or palpably begs the question.

The word *principle*, in its real and primitive import, means *beginning*. Hence it

is referred to what is first, either in relation to order, or in respect to importance. When it refers to some primary and established truth, with which some process of reasoning commences, or on which it is built, the term is correctly applied, and is perfectly intelligible. It is, for example, a principle in physics, that action and reaction are equal and contrary. This proposition is the expression of a general fact, ascertained by experience, but furnishes no explanation of the cause. As this fact, however, may constitute the ground of an argument, or the leading truth, from which our reasoning proceeds, it may very properly be termed a principle. When some cause of action, or the source, whence it originates, is to be signified, we name this also, with sufficient propriety, *a principle, a beginning, a spring, or cause of the action.* Thus we say, "He acts from good principles." "The principle, from which his conduct proceeded, or by which it was governed, was virtuous." The term then signifies "beginning," and hence is transferred to denote a fundamental truth,—a motive, or cause of action. If then, Mr.

Hume, by the term principle, means *source*, *spring*, or *cause*, to say that order results from a principle of order, is to say, that order is effected by the cause of order. This truism, if not a very philosophical, is at least a very harmless proposition, which no Theist will presume to controvert.

But it may be urged, that the identical proposition, here attributed to Mr. Hume, is not a correct representation of his hypothesis, for that he considers the phenomena of the universe, as resulting from a principle, or cause of order, inherent in matter itself. We reply, that this hypothesis, while it is objectionable on other grounds, begs the question. "For aught we know, *a priori*," says the author, "matter may contain the source or spring of order originally within itself, as well as mind does."* We stop here, to remark, that it would be imputed to any other man, less intelligent than Mr. Hume, as extreme ignorance, to talk of knowing any thing of mind, or matter, *a priori*. Matter, by such conjectural investigation, might be any

* Hume's "Dialogues concerning Natural Religion," vol. ii. p. 447.

thing, but what it is. Its qualities and properties can be learned only by experience. How is it possible to know them otherwise? To refer us to conjecture and speculation, where we have facts to direct our judgement, is inexcusable trifling, as to prefer possibility, or a *may be* to the testimony of experience, is irrational and absurd.

But a question here presents itself, which, if we mistake not, it would baffle the ingenuity of the Sceptic to answer. Mr. Hume says, that *matter* may contain a source of order within itself, as well as *mind*. If the author contends for the existence of nothing but mere impressions, which is one of his prime doctrines, denying the existence both of *mind* and *matter*, then this doctrine is at variance with his hypothesis, as here proposed. In his opinion, there is neither mind, nor matter. With what consistency then does he here admit the existence of both? If, on the other hand, he admits their existence, as his argument, or rather conjecture would imply, and acknowledges them to be not only distinct, but dissimilar substances, we ask, whence does mind originate? Is it co-

eternal with matter? This he must consistently, with himself, deny. Did matter create it? Can matter give existence to a substance of an order superior to its own? Whence then, we ask, does mind originate? To this question we entreat an answer. If mind be material, its operations are included in the laws of matter, and it is idle to speak of mind and matter, as subject to different rules; if not material, how can it be created, unless by omnipotent power.

Mr. Hume proceeds. "There is no more difficulty in conceiving, that the several elements, from an internal unknown cause, may fall into the most exquisite arrangement, than to conceive, that their ideas in the great universal mind, from a like internal unknown cause, fall into that arrangement." The irreverent and absurd comparison, here instituted between the atoms of matter and the ideas of the Divine Being, we dismiss with indignation. Language fails to reprobate it, in terms of merited sharpness and asperity. Let the Atheist reason; let him, indulge, if he will, in the most whimsical hypotheses, and the most

unintelligible abstractions ; but let him not rudely and cruelly outrage every devout and pious feeling. We firmly believe, that he labours under the errors of a beclouded and perverted judgement, and his condition, in whatever light it may appear to himself, excites our commiseration. If he believes that the error is ours, and that its correction would be beneficial, let him employ rational argument; but let him abstain from shocking our affections, by insulting the Being whom we reverence and adore.

What the unknown cause is, by which the atoms of matter fall into order, Mr. Hume has not ventured to conjecture. He insinuates the possibility, that the cause of order resides in matter itself. This hypothesis we reject for the following reasons: —1st, It is purely conjectural.—It is not supported by a single fact. We have no evidence, that matter possesses any inherent power. We perceive it assuming the forms of order, beauty, and utility; but the cause is unknown, or at least unperceived. To affirm, that it resides in matter, is to beg the question. The mere exist-

ence of a property furnishes no proof, that it is either eternal, or inseparable from the substance to which it belongs. 2dly, It will not be disputed, that the perception of order implies intelligence; the presumption therefore is strong, that the cause of that perception; as well as of the order itself, possesses intelligence. That atoms, which have no knowledge of order, should yet be capable of producing that knowledge, and that order, is wholly incredible. Yet we are called upon to believe, that under the influence of a blind necessity, into which principle Mr. Hume's hypothesis of order ultimately resolves itself, as he himself acknowledges *,—we are called upon to believe, that senseless atoms all concurred in harmonious co-operation, to form the human frame;—that one did not usurp the place of the other, each taking its proper station, and each assuming its proper form and character. What a demand is this on human credulity? 3dly, If the supposed principle of order be a ne-

* "Chance", he maintains, "has no place on any hypothesis, sceptical, or religious."—*Dialogues concerning Natural Religion.*

cessary principle, essential to matter, and not the result of intelligence, three insuperable difficulties present themselves. 1st, Order alone cannot account for life, much less for perception and thought. It is not by the mere arrangement of the atoms, of which his body is composed, that man becomes "a living soul." 2dly, If a principle of order be essential to matter, and its agency necessary, why is disorder to be found? Its existence is wholly irreconcilable with the hypothesis. 3dly, If a principle of order essentially and independently belong to matter, it seems folly to infer intelligence from the most complicated arrangements. Not having seen Mr. Hume write his essays, I can see no good reason, why we should resort to the supposition of intelligence to account for their production, when a principle of order, acting by an ignorant necessity, can explain their origin. "There is no more difficulty in conceiving, that the letters and words, from an internal unknown cause, may have fallen into *the* exquisite arrangement, than to conceive, that their ideas in *his* mind, from a like internal and unknown cause, fell in-

to that arrangement." Whatever implies no contradiction may be conceived: Mr. Hume's supposition therefore is conceivable; of its probability, which is the question at issue, every reader will judge for himself.

"The universe," says Mr. Hume, "may have been for many ages in a continued succession of chaos and disorder. But is it not possible, that it may settle at last, so as not to lose its motion, yet so as to preserve an uniformity of appearance, amidst the continual motion and fluctuation of its parts?" .... "The continual motion of matter, in less than infinite transpositions, must produce this economy or order; and by its very nature, that order, when once established, supports itself for many ages, if not to eternity." He elsewhere says, "That matter rests in a state of order, but not in a state of confusion." Why should that condition of its elements, which is regular and beneficial, be steady and lasting, while all other states, disorderly and detrimental, are changeable and temporary? To this question no rational reply can be offered, which does not include the

agency of an Intelligent Cause. To resolve the facts into the essential nature of matter, a brute substance, devoid of sense, perception, foresight, any knowledge of order, any acquaintance with its own properties, is not merely to beg the question, but to propose a hypothesis, which it is no less ridiculous to offer, than it seems irrational to receive.

But, if it be the nature of matter, to be in continual motion, until it gain a steady and permanent form, we ask, why is not that form as often noxious, as it is beneficial? Why is not the form regularly offensive, or injurious? Supposing the chances of good and evil to be equal, and this is a large concession, why are not as many animals produced, whose every organ is a source of pain, as there are of those, whose senses furnish sources of pleasure? Surely, if animal organization were the result of accident, this issue must be the inevitable consequence. That matter should of itself never rest, until it had acquired a permanent and beneficial form, and without intelligence arrange itself into useful and beautiful organisms, the structure of which

human sagacity labours in vain completely to comprehend, moving itself without intelligence, yet with all the wisdom of intelligence, acting without design, yet giving birth to beings capable of design, is surely a hypothesis, which it requires no common credulity to believe.

But it has been remarked, that mere arrangement will not explain the origin of a single organic being. Here is a difficulty, of which Hume seems to have been aware. He prudently, therefore, confines his attention to the constitution of mere forms, and claims for his hypothesis the merit only of plausibility. "Let us contemplate," says he, "the subject a little, and we shall find, that this adjustment, if attained by matter, of a seeming stability in the forms, with a real and perpetual revolution, or motion, of parts, affords a plausible, if not a true, solution of the difficulty. It is in vain, therefore, to insist upon the uses of the parts in animals, or vegetables, and their various adjustments to each other. I would fain know, how an animal could subsist, unless its parts were so adjusted. Do we not find, that it immediately

perishes, when even this adjustment ceases, and that its matter corrupting tries some new form?"

Mr. Hume, with all the ease and freedom imaginable, as if our notions were to be governed by fancy, and not by reason—by hypothesis, and not by fact, or, as if a plausible solution were to be received for a satisfactory explanation,—supposes a world constructed in his own way, by the fortuitous congregation of atoms, and then gravely tells us, that, if the adjustment of parts to parts be once attained, order and stability are the necessary result. How easily he slurs over the difficulty? How is this adjustment, which it requires consummate wisdom to comprehend, to be effected without wisdom? How is the harmonious and complicated relations of the various parts, which he so freely assumes, to be accomplished by rambling senseless atoms? To tell us, that adjustment, if attained, affords a plausible solution of the difficulty, is to tell us, that a mere hypothesis is to be received for the explanation of a fact,—that to suppose a world to be made, is to account for its

being made, and that if an adjustment be once attained, it is attained. How is the adjustment to be effected? This is the question. It is indeed true, that if letter had been adjusted to letter, word to word, and sentence to sentence, by blind chance, or equally blind necessity, Mr. Hume's Essays might have been composed; but what is this, but to say, that if the result had been, it would have been? Are such truisms to be received as arguments?

It will be granted, that, if order was introduced by chance, it is vain to speak of design—that, where there is no adjustment of parts, there can be no organization, and no life, and that it is folly to insist on uses, where nothing was intended for use. This is a mode of reasoning, for which the mind of the author, sagacious and profound as it was, appears to have had an extraordinary aptitude, and in which he indulges with singular self-complacency. If we were required to believe, that Mr. Hume's Essays were penned by chance, and printed by chance, it would be an unparalleled demand on human credulity. And, if we were gravely assured, that, if the adjust-

ment of thought to thought, and type to type, and all to paper, were once attained, the difficulty would be plausibly solved, we could only either smile at the palpable absurdity, or be indignant at the insult offered to our understanding. Yet this is comparatively nothing to the hypothesis of the author. For by it we are required to believe, in opposition to uniform experience, or at least without the shadow of evidence, that vital matter existed, before a vital organism was formed,—that contrary to known laws, it resisted the effects of chemical agency, until the organization was completed,—that the bones, the sinews, the muscles, the nerves, the lungs, the heart, the stomach, after rambling at large through indefinite ages, and immeasurable space, consentaneously concurred, either as members, or as atoms, with one simultaneous movement, in regular order, and, without either sensation or intellect, produced a form sentient and intelligent; and that, though before incapable of resting, they here immediately rested. Is there the shadow of plausibility in such a hypothesis? We know, that neither animals

nor vegetables could exist without an adjustment of parts, but how was the adjustment produced? This is our question; and until this question is answered, Mr. Hume's fancies, and suppositions, and possibilities, amount to nothing. They are utterly valueless. Would Mr. Hume's revolutions of senseless atoms, congregated to his own fancy, serve to explain the origin of any sentient and intelligent being? "But," says Mr. Hume, in the character of Philo, "Have you ever seen Nature in any such situation, as resembles the first arrangement of the elements? Have ever worlds been formed under your eye? Have you had leisure to observe the whole progress of the phenomena from the first appearance of order, to its final consummation? If you have," he adds, with an air of triumph, "cite your experience, and deliver your theory."

I will take the liberty to address my answer to Philo. "Permit me to request, that you will condescend to explain, what you mean by Nature. Is it the ideal personage, whom you sometimes represent, as arranging and governing the phenomena

of the universe? If this be your meaning, we confess, that we have never seen this mighty personage, in that, or any other situation. If you intend, by the term nature, no ideal personage, but matter and its properties, then we acknowledge, that we do not know, in what situation matter was, at the period in question, and shall gratefully receive from *you*, or any other Sceptic, information on the subject. When we have thus learned the situation of matter and its powers at that time, we shall be enabled to judge how far they resemble those of the present period. In the mean time, we must take matter, as we find it, and maintain, that from its known properties, as learned by experience, the guide, to which you appeal in all matters of fact, we have every reason to conclude, that they are utterly incapable, by themselves, of accounting for the formation of the universe—not even of a single organized being. But have *you* ever experienced matter in a situation different from the present? Has a world ever been formed under your eye? Had you leisure to observe the whole progress of the phenome-

na, from the first appearance of order, to its final consummation? If you had, then *cite your experience, and deliver your theory.* We cannot admit a fancy for a fact, or a mere *may be* for a probability. *Cite* your experience.

"We admire the ease, with which you assume the arrangement of the elements, as a matter of course. You will pardon us, however, for asking, by whom, or by what, was the arrangement effected. Order is either accidental, or designed. If designed, it implies a conception of order. Where did this conception exist? Was it in a chaos of floating, rambling, senseless elements? If so, age seems to have deplorably impaired their faculties. Was it by accident? It would be far more credible, that the stones of St. Peter's at Rome arranged themselves into their present form. Was it by necessity? We might as well believe, that the types, by which Hume's History of England was printed, distributed themselves by a blind necessity into their proper order. Admitting it to be true, though the concession be highly improba-

ble, that particles of air, earth, and water, by their own innate power, arrange themselves in the plants, and animals, which they enter, and are assimilated to them, acquiring new properties, how were this arrangement and assimilation to be effected, before any animal or vegetable existed? Have you ever witnessed this extraordinary process? Have you ever seen a world made? If you have, 'cite your experience, and deliver your theory.'"

Another Sceptic, who adopts a similar hypothesis, argues, that the substance of all matter is the same, but that its characters and properties are differently developed, as the primary atoms happen to be differently situated, in respect to one another*. He informs us, that, in the midst of all the various changes, combinations, and dissolutions, of bodies, we see nothing else, than the necessary effects of motion, altering the appearances of the universe, and yet leaving its mass always the same. This

* "Academical Questions, by the Right Honourable William Drummond."

view of the subject we consider to be unphilosophical, and false. It is neither supported by facts, nor can it explain the phenomena. Atoms of matter, it is granted, acquire different properties, according to the situations, into which they are thrown. The same particle, which composes part of the common clod, may become part of a vegetable, and then part of an animal. These transmutations are acknowledged. But, unless the Atheist can explain, how they could be effected, when there was neither vegetable, nor animal substance, through the medium of which they could be produced, or state some fact to prove, that the transmutation of an inanimate into an animate particle was possible, before an animal substance existed, his hypothesis is a mere gratuitous fancy, unsupported by even a tittle of evidence. Motion is a mechanical affection of matter; and though necessary to the processes of vegetation, and animalization, cannot account for the production of a single vegetable, or animal substance. No motion of unorganized matter can, without the aid of a

prior organism, produce an animal structure. This is a universal law of nature; and it is incumbent on the Atheist to prove, that there was a time, when this law did not exist, and then his argument will be conclusive. But, by his hypothesis, the laws of matter are eternal and immutable.

The author presumes the existence of primary particles; these then existing by necessity, must have had essentially one and the same nature, in every respect. There is not a shadow of reason for believing, but every ground to deny, that some atoms had from eternity a vegetable, and some an animal character. No possible motions and combinations, therefore, could produce a vegetable, or animal being. As far as experience teaches us, no new property can be produced by any composition of two or more substances, all precisely of the same qualities. Those Sceptics, then, who write so fluently, and argue so speciously from these transmutations, as they are now exhibited, forget to explain how they could possibly

be effected, when none but primary particles, all of one and precisely the same nature, existed.

It would exhaust the patience of the reader, were we to detail and examine the various hypotheses, by which it has been attempted to account for the construction of our system, without the aid of intelligence. The most extravagant whimsies have been indulged, each Atheist forming a world according to his own rambling fancy. Some of them tell us, in order to account for the production of organized beings, that germs existed from eternity, and having been thrown into moulds, fit for their reception, were, by favourable circumstances evolved, expanded, and nourished. The hypothesis can only excite ridicule; it is unworthy of argument. Will the Atheist tell us, who fitted these moulds for the reception of these germs? Were they formed by accident? Will he name any known mechanical or chemical law, (for the laws of animal life had then no existence,) by which the formation of such moulds could have been effected? He assumes the existence of sperms; but can

he produce a single example of the existence of a sperm, anterior to that of an organized being? We know of no sperm, which has not issued from a vegetable or animal substance. The Atheist, without a single phenomenon to justify his opinion, gives the sperm existence, prior to an organism. To offer a visionary hypothesis, not only unsupported by any known physical fact, but contradicted by universal experience, is puerile, and reprehensible trifling.

Others maintain, that certain filaments, endowed with certain appetencies, can account for the production of vegetables and animals; while some assert the eternal existence of animated globules, which, by certain assumed affinities, arranged themselves into the forms of organized beings. But have they adduced a single fact, in order to shew, how these globules, devoid of intelligence, without design, and without concert, arranged themselves in order, so as to produce a regular and harmonious whole—how so many, as a celebrated physiologist* observes, agreed to make a leg,

* Dr. Barclay.

so many to form the blood, and so many the bones and muscles; and that none of them encroached on the choice, or operation of the rest. Nay, dismissing the folly of supposing, that unintelligent particles, globules, or filaments could harmoniously arrange themselves into organized forms, we ask how was intelligence produced? Could this be effected, but through the medium of intelligence? Nay, how were these globules and filaments protected, antecedently to their aggregation, from the effects of chemical agency? But it is time to dismiss these extravagant cosmogonies,—they resemble the dreams of a distempered fancy, *ægri somnia*, more than the grave speculations of a rational and philosophic mind.

In reviewing the various hypotheses of Scepticism, nothing strikes us so forcibly, as the palpable discordancy of Atheists themselves, in their attempts to explain the formation of the universe, excluding the agency of a supreme and designing Cause. We should be pleased to know, whether this discordancy arises from their favourite principle, "a principle of order,"

or of harmony; or, "as matter obeys its own laws," whether assent and dissent, agreement and disagreement, be one and the same thing. The prodigies too, of which they require our belief, shock the understanding, while they possess not the merit of amusing the fancy. Some of them, as we have seen, would persuade us, as they profess to believe, that all organic forms originated from atoms, diffused through the immensity of space, and accidentally conglomerated into plants and animals. If we ask, how these atoms were put in motion, their answer is as prompt, as if they had been, from eternity, eye-witnesses of the fact. They tell us, that they were eternally in motion. If we ask a proof, they give us assertion; if we want a fact, they are ready with a hypothesis. If we inquire how senseless atoms could arrange themselves into the forms, and possessing the powers, of sentient and intelligent beings, they have a personage at hand to solve the difficulty, and account for the miracle. This personage is an imaginary being, a creature of their own fancy, whom they sometimes call Nature,

and sometimes Necessity. To the sole agency of one or other of these convenient personages, are ascribed all the wonders of the universe. Attraction and repulsion, vegetation and generation, instinct and reason, in short, all the powers and operations of the physical and moral world are under her direction and control*. If we inquire, what makes the earth to produce and sustain its productions, it is Nature, or it is Necessity. If we ask, what teaches the infant, or the lamb to suck, or what nerves and muscles to use, in order to move a certain limb, it is Nature, or it is Necessity. What teaches them to avoid what is noxious, or painful, it is Nature, or it is Necessity. And, if it did not sound as too absurd, we should be told, that Nature, or Necessity, teaches the sun and planets the art of gravitation.

* One of the most celebrated philosophers of antiquity allowed, that in one sense all things were subject to the laws of nature, but he was careful previously to inform his reader, that the operations of nature are under the government of Deity. "Sequitur ut doceam omnia subjecta esse naturæ, eaque ab ea pulcherrime regi." . . . . "Nulli igitur est naturæ obediens aut subjectus Deus: omnem ergo regit ipse naturam."—*Cic. de Nat. Deor.*

Again, if we inquire, what or where either of these wonderful personages is, or whence she sprang, they cannot precisely tell, nor do they seem quite sure of her existence. For, at one time, she is a real being, presiding over the moral and physical world, and arranging the whole with consummate wisdom: at other times, she is only the properties and powers of matter, acting by uniform and determinate laws. And, what is peculiarly worthy of remark, when they find it impossible to account for the existence of a single organism, by the operation of these laws, as ascertained by experience, then, ever fruitful in conjectures and fancies, they would have us believe, that the senseless atoms of matter, when the world was in embryo, might, with all the wisdom of intelligence, have formed plants and animals. We know not, they tell us, what nature might be then; true: but experience teaches us, what she actually is, and we must judge from facts, not possibilities. And even, if we had now ocular evidence of atoms of matter forming themselves into a being of a new species, superior to that of man,

what conclusion would the Atheist draw? Is there a reflecting and rational mind, who, while struck with astonishment, would not conclude, that the new organism was the production of some intelligent, though invisible, hand? Would it satisfy him to refer the production to chance, or to say, that it is, because it must be?

Having now endeavoured to show, that the ascription of certain inherent and independent powers to matter, acting either by chance, or by necessity, is a hypothesis, not only gratuitous, but, were it even true, wholly incapable of accounting for the construction of our system, with its sentient and intelligent beings, we should now proceed to examine the hypothesis, by which it is maintained, that the present constitution of nature, with certain modifications, has existed from eternity. But, as a modern Sceptic, the author of "Academical Questions," proceeding on the same gratuitous assumption, and professing to adopt the principles of Newton, has introduced into his Disquisitions, some arguments, in order to prove, that we must either abandon the Newtonian philosophy, or relinquish

our belief in the existence of Deity, it may not be deemed a trespass on the time and patience of the reader, if we devote the following section to an examination of his reasoning.

SECTION VIII.

Arguments against Theism, adduced by the Author of "Academical Questions," and founded, as he maintains, on the Philosophy of Newton.

THE author of "Academical Questions" introduces his arguments, with observing, how the youthful mind is elevated, by the study of astronomy, to the most sublime and enthusiastic conceptions of the Great Architect of the universe. The rapturous emotions, however, which the contemplation of the heavenly bodies at first awakened, the author informs us, are soon lamentably repressed, when he perceives that Newton resolves the whole of the phenomena into the powers and properties of matter. The continued motion of the celestial bodies, he is taught, results from

"a *vis insita*, and from their mutual gravitation; and it is quite unnecessary to account for it by supernatural causes." *

This observation, we apprehend, betrays what, from the author's general acuteness, we should not be disposed to expect, a strange misconception of the real province of the philosopher, as well as of the principles and tendency of the doctrine, taught by the profound and enlightened Newton. If it were true, that the astronomer, or the physiologist, when they investigate proximate causes, necessarily believe, and teach, that there are no ultimate or primary causes, the author of "Academical Questions" might have some ground for representing the Newtonian theory, as excluding the necessity of an Intelligent First Cause. But such a notion is wholly erroneous. When Newton ascribes the planetary motions to a *vis impressa*, and a *vis insita*, he neither asserts, that the powers and properties of matter, whence the phenomena immediately proceed, are underived and independent, nor does his doctrine require

* Chap. iii.

us to believe, that these are primary and independent causes. On the contrary, he disclaims the notion, that gravity is an innate property of matter. It must indeed be acknowledged, that, in his opinion on this subject, he has incurred the charge of vacillation and inconsistency. At one time, we find him representing gravity, as an *active power;* but let it at the same time be observed, that he does not affirm it to be uncommunicated. "Satis est, quod gravitas revera existat, et agat, secundum leges a nobis expositas." * At another time, we hear him disavowing the notion, that gravity is an essential property of matter, and, while he regards it as an *effect*, inquiring into its cause. This he conjectures to be a subtle ethereal medium, readily pervading all bodies, expanded through the whole heavens, and causing the sun, planets, and comets, to gravitate towards one another †. In his letter, however, to Bentley, written some time after the publication of the "Principia," he clearly and expressly denies, that gravity is a primary cause, or a

* *Princip.* p. ult. † *Opt. Adv.* II. 18, 19, 20.

power inherent in matter. "It is inconceivable," he says, "that inanimate brute matter should, without the mediation of something else, operate upon, and affect, other matter, without contact, as it must do, if gravitation, in the sense of Epicurus, be essential and inherent in it. And this is one reason, why I desired, you would not ascribe innate gravity to me. That gravity should be innate, so that one body may act upon another, at a distance, through a vacuum, without the mediation of any thing else, is to me so great an absurdity, that I believe no man, who has a competent faculty of thinking, can ever fall into it. Gravity must be caused by an agent, acting constantly according to certain laws. But whether this agent be material, or immaterial, I have left to the consideration of my readers." It is evident, then, that he considered gravity to be an effect. It is also evident, that in the second edition of his Optics, published after his letter to Bentley, he refers the phenomena to the agency of mind *. Nor is

* See "Ancient Metaphysics," vol. ii. p. 276.

there any inconsistency in the hypothesis, that these are immediately ascribable to the properties of matter, but that the properties themselves have their origin in an Intelligent Author. The machinist may resolve the action of his machine into the gravity, the hardness, the elasticity, the form, the order, and the other accidents, qualities, or properties of its component parts; but it does not follow, that these properties either are, or are considered by him to be, of themselves sufficient to account either for its construction, or its motion. Mechanical skill, and a moving power are necessary. The same observation is applicable to the *vis centripeta*, the *vis centrifuga*, and the *vis insita;* which, in the absence of intelligence, are as inadequate to the production of beauty, order, and harmony in the system, as they are incapable of directing the missile in a sling, so as to hit the mark. The Theist, therefore, is not chargeable with an unnecessary multiplication of causes, or referring, without reason, the phenomena to supreme intelligence, when he ascribes the construction and motion of

the planetary system to a Wise and Omnipotent Author.

It is evident, also, that the theory of Newton would be equally true, whether the properties of matter were innate, or derived. The facts, viewed merely in themselves, would be the same; the laws deduced from these facts would be the same, and with these only is the physical enquirer concerned. Ultimate causes, or indeed any causes strictly so called, are beyond his reach. Whether these facts, and the known properties of matter, can receive any satisfactory explanation, unless by referring them to an Intelligent Author, is a question, which belongs to the province of the metaphysician. Newton, accordingly, confining himself to his proper sphere of enquiry, modestly and cautiously declines its discussion. It was the laws of motion, and not the causes, which he professed to investigate. Of the origin of these laws, how matter, for example, gravitates, or how action and reaction are equal and contrary, he was confessedly ignorant. When he attempted conjecture, he felt himself embarrassed.

axis had this, and no other, inclination? How came it, that such, and no other, are the relative situation and distance of the sun, the earth, and the moon? Am I to ascribe that to chance, which evidently indicates design? or shall I admit a fact, as an ultimate cause, which itself evidently requires a cause? "I know," will the student say, "that all the difficulties, which first present themselves on examining a clock, may be easily explained by the laws of motion, by the equal and contrary action of centripetal and centrifugal forces, by the relative situation of the wheels, and the action of the pendulum. But, what then? This explanation, instead of weakening, serves to strengthen, my conviction of the absolute necessity of a designing cause to adjust the immediate causes, and to arrange and move the whole." The argument he will reject as shallow and inconclusive, betraying a superficial judgement, and narrow views.

Respecting the assumed existence of the two principal forces, on which so much stress is laid, we have already submitted our humble opinion to the judgement of the

reader. We know, that a stone held in a sling, by the combined projectile and attractive forces of the hand, will describe a curve; and we know, that, in like manner, a projectile force, and the central attracting body, will make a planet revolve round the sun. But have we ever witnessed the planetary projections? or have we seen the *vinculum*, by which the sun and earth are mutually connected? All that we certainly know is, that all bodies have a tendency, in a certain ratio, to a central point, called the common centre of gravity. This is a matter of fact, ascertained by observation; but the cause is unseen. We know, also, that, a propelling force being presumed, a body under the agency of this force, and with a deflecting central tendency, will describe a curve; and, that two such forces being supposed, the phenomena of the planetary motions may be satisfactorily explained; but of the actual existence of such forces, we have no evidence. We know nothing beyond the fact, that our planet moves round the sun, as if it had a tendency towards him, and a tendency to recede from him; but of the causes

of these tendencies we are wholly ignorant.

The young student, however, may safely grant to the Atheist his two forces, though we have no evidence of their existence, for they are not visible; but he will not fail to enquire, how the Sceptic knows, or how it can be necessary to our assent to the Newtonian theory, to believe, that these forces, if they do exist, exist necessarily and independently? This is his first question. He will next ask, how comes it, that they are so managed, that a beneficial effect is produced? Can that, which is devoid of understanding, act with understanding? Granting their existence, I wish to know, by what, or by whom, they were duly proportioned? When the wind and tide bear with different degrees of obliquity on the ship's proper course, does it require no skill in the helmsman to steer the vessel in the right direction? If I am to believe, without evidence, these powers to be innate in matter, and matter to be eternal, and if I err, as I am persuaded I do not, in ascribing their existence to Deity, I cannot err

in believing, that they are incapable of regulating themselves, or producing beneficial effects, without the direction of Intelligence.

He proceeds. "The Newtonian, who is an Atheist, will observe, that the supposition of a prime intellectual mover, is not only unnecessary to the system of Newton, but seems even to contradict it. *Hypothesin non fingo*, ought to be the common saying of every Newtonian; and the introduction of a spiritual being as the principle of motion, is a mere hypothesis." * It has been shewn, that there is no mutual repugnance between the two opinions, namely, that the immediate causes of the phenomena are the properties of matter, and that these properties are the ordinations of a Supreme Intelligence. It is clear, also, that Newton perceived no inconsistency, no contradiction, in maintaining his theory of planetary motion, and the existence of an Intellectual Mover. This is a discovery, which eluded the sagacity of the enlightened astronomer, the merit of which belongs to the author

* Academical Questions, p. 201.

of "Academical Questions." In justice, however, to the Sceptic, it should be observed, that he speaks cautiously, affirming only a seeming contradiction. "That an intelligent mover is unnecessary," he asserts in express and unqualified terms. By this observation he must be understood to mean, that, as far as the planetary system is concerned, the doctrine of a Supreme Intelligence is an idle hypothesis. Will the author, then, explain to us the origin of motion? Will he refer it to gravity, and contend, that it is eternal? But Newton disclaims the notion, that gravity is a cause, and pronounces it an absurdity. Will the author, in opposition to Newton, affirm, that gravity is an essential property of matter? Then he must not appeal to the authority of Newton. This sagacious, yet modest, interpreter of the laws of nature, after stating, in the third book of the "Principia," that the argument from appearances concludes with more force for the universality of gravitation of all bodies, than their impenetrability, fearful, lest the reader should infer, from the seeming universality of gravitation, that it is therefore

an essential property of material substance, he emphatically adds, "Not that I affirm gravity to be essential to matter."

As in the philosophy of Newton, then, it is not maintained, that matter is self-existent, and its properties independent, and as the distinguished author of that philosophy disavowed the notion of gravity as a cause, it is an egregious misrepresentation of the Newtonian doctrine to assert, that it excludes the necessity of an Intelligent Author. If Newton, who professed to investigate the laws of motion, and the order of phenomena, had been capable of so unphilosophical an assertion, as that the properties of matter, or the three forces, are ultimate causes—motions and not powers being the only objects accessible to his research—should he have taught, that the projectile motion was produced by a random impulse, that gravity is an underived property of matter, and that its ratio is not the ordination of intelligence, but the effect of chance or blind necessity, if we had even received his physical theory, as in every respect sa-

tisfactory, we should have rejected his metaphysical hypothesis as false.

The Sceptic observes, that *hypothesin non fingo*, should be the common saying of every disciple of Newton; and he might have added, of every one, who desires successfully to investigate the laws of nature. Now, the term *hypothesis* means nothing more than a supposition. It may either be unsatisfactory, as not explaining the phenomena, and is therefore false, or it may be consistent with the phenomena, and therefore may be true; but unless founded in observation and experience, it is still a hypothesis. Every theory also, unless supported by facts, is still hypothetical. Is it a fact, or can it be proved, by an appeal to observation or experience, that our earth was set in motion by a *vis impressa*, or by some mass impinging against it? If this cannot be evinced, if there are even facts, which lead to a contrary conclusion, is not a physical *vis impressa* a mere hypothesis? Can it be proved, that gravity is a cause, and not an effect? The attempt would be fruitless;

is it therefore any thing but hypothesis, to assume it to be a cause? Will it be argued, that we know of no means, by which a circular motion can be produced, unless by the combination of a projectile with a deflecting force? This argument can have no weight, until it be proved, that man's experience is the measure of possibility. All that we are justified in maintaining, is this, that a *vis centrifuga*, and a *vis centripeta*, in a certain ratio, together with a *vis insita*, being presumed, the planetary motions are satisfactorily explained. But we repeat, that there is no evidence whatever of any forces; and if they were proved to exist, or to have existed, their adjustment would require the hand of intelligence.

We concur with the author in rejecting hypotheses. But when we read of atoms, and conglomerations, and motions, and concussions, and combinations, of globules, of filaments, of appetencies, of forces centrifugal, and forces centripetal, all cooperating by a blind necessity to construct the system, we may be excused for asking, if this be not as idle and monstrous a

hypothesis, as ever was concocted in the brain of a sane man? It is with little consistency, we apprehend, that the Atheist can affirm, *hypothesin non fingo.*

"Newton", continues the Sceptic, "admits several origins of the *vis impressa*, that is, several causes of communicated motion; but they are all material forces, *ut ex ictu, ex pressione, ex vi centripeta.* He likewise teaches, that the *vis impressa consistit in actione sola.* Now action and reaction, according to the third law of motion, are always equal and contrary; and, consequently, whatever acts must be acted upon. Would it not be absurd to suppose the reaction of a material world, upon an immaterial mover?"

In answer, we deny, that Newton ever said, or ever dreamt of maintaining as a universal proposition, that whatever acts, must be acted upon. His third law of action and reaction is purely physical. His investigations were confined to material substances. He forbore from invading the province of the pneumatologist, nor did he presume to speculate on the laws of a being or beings, possessing none of the pro-

perties of matter. It was foreign to his purpose. To suppose, that the laws of a material are applicable to an immaterial substance, is absurd. We may as well apply the laws of sound to the laws of sight. But before we can admit the axiom assumed by all Materialists, that no substance can act upon another, unless they have some common property, or the author's assertion, "that nothing can move another, which is not itself capable of being moved," we, in the first place, call upon him to prove, that there is an absurdity in believing, that there exists in man an immaterial, indivisible, thinking substance. We call upon him to evince, by arguments less questionable than have yet been adduced, that man is purely a material being. We call upon him to refute the reasoning by which it is shown that there is something in man, whose qualities and properties have no resemblance to those of matter, or to prove even the most remote likeness between an idea, as that of sound, or an emotion, as that of hope, and any affection of material sub-

stance. And secondly, when he has accomplished this, we require a proof, that there is no difference between what is not attested by experience, and what is contradicted by experience. And thirdly, we ask, by what arguments he can show, that the modes of existence with which we are acquainted, are the only possible modes of being? If he will maintain, that man is at the head of the intellectual universe, that his experience is the measure of possibility, that no being, but material substance, can exist, that there can be no law or mode of being, unless what is exemplified in our little world, he may sneer at the blindness and bigotry of the religionist, as he pleases, but if conceit, arrogance, and a contracted spirit are characteristics of bigotry, he himself must submit to be pronounced a bigot. If the former would confine all truth within the narrow limits of his own faith, the latter will admit no knowledge, but human knowledge, no truth, no possibility which man's little experience does not attest. Each is equally an arrogant and conceited dogmatist.

The author continues, "When the

Theist takes it for granted, that there is a principal intellectual Mover, he also takes it for granted, that there has been a time, when all bodies were at rest. Now, in doing this, he doubly offends against the Newtonian method; for first, *hypothesin fingit*, and secondly, he supposes more causes, than are necessary to explain the phenomena."

We should be justified in reprehending the author for asserting, that the Theist "*takes it for granted*, that there is a principal intellectual Mover." Is our doctrine a mere assumption? Have we assigned no reasons for the creed, which we profess? The Theist adduces cogent, and to minds not addicted to vague and improbable hypothesis, irresistible arguments for believing, that there exists an Intelligent First Cause, the Fountain of all being. He perceives it impossible to account for existing phenomena, on the supposition, that nothing but matter has existed from eternity. He examines the fanciful cosmogonies, which have been obtruded on the world by some visionary Atheists, and he finds them consist of nothing but the

most extravagant imaginations, the most improbable conjectures, and groundless assumptions, destitute of every claim to rational assent. Every thing around him conducts him to a different conclusion; and he infers a Self-existent Intelligent Being, whose attributes he collects from the nature of the system, in which he finds himself placed. The author is equally in error, when he asserts, that the Theist assumes, that all bodies were once at rest. This he seems to consider as a corollary from the belief in a principal Intellectual Mover; for it is difficult for the Atheist to divest himself of the conviction of an eternal material substance. The inference, however, rests on no other foundation, than the assertion of the author. The Theist maintains no such hypothesis, either directly, or inferentially. He feels too deeply his own ignorance of the question of creation, to presume to say, what was the primordial state of the planetary system. He does not assert, that the earth was once at rest, though he affirms, that its motion was the effect of a Supreme Power; but its production and its motion may have been,

for aught that he professes to know, contemporaneous events. On a subject so inaccessible to human investigation, he offers no opinion. He leaves it to the Atheist to indulge in the dogmatical conceits of cosmological speculation, and to amuse himself with the arrogant fancies of a spurious philosophy. As a Newtonian, he believes, that the system is moved and preserved according to certain laws; and as a Theist, that these laws were either the ordinations of Divine wisdom, when the system was framed, or that they are the immediate agency of Supreme Intelligence. He assigns no more causes than one for the production of the universe, and he affirms, that no other, than an Intelligent Cause, can account for its existence.

Before we dismiss this observation of the Sceptic, we cannot but remark his singular inconsistency. He tells us, that, by supposing matter to have been at rest, we offend against the Newtonian maxim, by feigning a hypothesis. We ask him, whether he conforms to the example of Newton, when he supposes matter to have

been eternally in motion? Is not this a hypothesis?

The author seems to conceive, that the philosophy of Newton explains the causes of the phenomena. This is an error, which, we trust, has already been sufficiently exposed. Is gravitation a cause? Certainly not; it is a general fact. Is gravity a cause? Newton disclaims the notion as absurd. Is rectilinear motion by impulse, supposing impact to have taken place, a cause? This is equally absurd. Has impulse been proved? It has not. Gravity is the tendency of matter to matter, and Newton developed its laws; but the cause eluded his research.

The author proceeds. "Since it is admitted, he will say, that after any body is projected, all the forces, which act upon it, are physical, it only remains to be shown, that the projecting force is also material, in order to prove, that motion can in no instance be ascribed to an immaterial cause." The Theist will not concede, what the author freely assumes, that the forces after projection are exclusively phy-

sical. He will deny, that we have any evidence of the existence of such forces, all that we know, being the tendency of the projected body to a central point, with the ratio of this tendency. Should it be replied, that the forces are acknowledged in the philosophy of Newton, we answer, that, while Newton has applied the term to gravity, he disclaims the notion that gravity is a cause, leaving it undecided, where the force or ultimate cause resides. Several of his interpreters considered gravity to be an effect.

In order to prove, that the projecting force is material, he reasons thus. "There seem to be only two forces, however variously named, which can overcome the *vis inertiæ* of bodies, viz. attraction and repulsion. The tendency of any projectile to the earth's centre is caused by attraction, which the Newtonians in this case term gravity." How has the author learned, that the tendency is caused by attraction? Newton was ignorant of the cause, and we maintain, that the cause is not known. Gravitation, or the tendency,

is admitted to be a fact; but, beyond the fact itself, our knowledge does not extend. He proceeds. "Again, the projecting power, by which bodies are carried from the surface of the earth towards the heavens, may be called repulsion." . . . . "Since it appears, then, that forces impressed can act in no other way, than in overcoming the *vis inertiæ* of bodies, and since all forces impressed are reducible to two, which we have called attraction and repulsion, in what manner shall we pretend to ascribe any motion to a volition of the mind, accompanying indeed, but in no way causing, the motion?"

This argument is levelled indirectly against the existence of an Eternal Immaterial Author of the universe, and directly against the existence of an immaterial principle in man. If by the term *attraction*, as applied to the planetary system, it be meant to express the general fact, that material substances, in certain states, mutually approach, we acknowledge the existence of the fact, and though we deem the name somewhat objectionable, as cal-

culated to lead to false association and error, we consent to adopt it*. But, if by attraction be implied an active force essential to matter universally, and independently on a Superior Power, a force, by which the sun draws, as by a *vinculum*, or some innate energy, the planetary system towards it, we have assigned our reasons for denying, that the phenomena furnish any evidence whatever, by which the existence of such a power can be established, while we admit, that a *vis centripeta*, and a *vis centrifuga* being supposed, the revolution of a planetary body round the sun may be explained.

When the author then asserts, that all causes of motion are reducible to two, attraction and repulsion, and that the hypothesis of an Immaterial Mover is unphilosophical and absurd, we object to his argument, and refuse our assent to his conclusion, until he has proved, that matter pos-

* Emerson in his "Defence of Newton's '*Principia*,'" states, as a vindication of the term, that by attraction is not meant physical, but mathematical attraction. He must have regarded it, therefore, as purely notional, otherwise his designation would be a palpable absurdity.

sesses active properties essentially and eternally its own,—that *attraction* and *repulsion* are not merely generic names, for certain classes of our perceptions,—that there can be no cause of motion, which is not perceptible by sense,—and that unintelligent powers can modify themselves, and regulate their own motions.

If we desire to avoid error, in the investigation of causes, we should be careful to dismiss names as accounting for nothing, and to fix our attention on facts. The terms force, power, attraction, repulsion, and resistance, in their strict import, denote, as has been observed, the exertions of animate beings. Perceiving, that similar effects are produced by the agency of unintelligent matter, we transfer the terms, and apply them to causes purely physical; but no exertion of power can belong to material substance.

The author's assertion, that a volition of the mind accompanies motion, but does not cause it, we pronounce to be no less extraordinary, than it is unphilosophical. On the ambiguity of his language, when

he states, that, the volition *accompanies* the motion, we forbear to animadvert; but we say, that the former *precedes* the latter; and, in opposition to his opinion, we affirm, that it bears to it the relation of cause to effect. Of this we have as incontestable evidence, as of the connexion of any antecedents and consequents. Will the author deny, that the motion of his hand, when he wrote the sentence in question, was caused by a volition to write it? If a volition was not the cause, will the author inform us, what set his fingers in motion, so as to commit to paper certain characters, exhibiting visible signs of certain mental perceptions and convictions? "That the animal spirits," says the author, "or that the fibrils of the nerves act upon the antagonist and elastic muscles, and that one of these, contracting while another expands, may produce the motion of a stone, thrown into the air, can be true, because action and reaction may be still equal and contrary. But the moment we suppose an immaterial cause, by which all this machinery has been put in motion, we leave the language of philosophy for that of conjecture, and

contradict the laws, which we ourselves have established, for the sake of an hypothesis."

We shall not here enquire, what the author means by "animal spirits," an expression certainly not peculiar to him; but as he maintains, that nothing but matter exists, we are warranted in presuming, that these *animal spirits* are something material. This being the case, we cannot but regret, that he has not told us, where they are to be seen, or touched, or where we shall find them. He has been careful to inform us, that they affect the nerves, but what they are, how these spirits are discernible, how by their spirituality they can act upon the nerves, and, what is most important of all, how, or by what, they are themselves in the first place acted upon, the author has prudently offered no explanation. He rests satisfied with the declaration, that they affect the nerves. We reply, that the proximate cause of an effect may be the agency of a material substance; but the effect may be such, that no material substance can be supposed to be its primary cause, without violating the established

principles of judging and reasoning. The motion of my arm, while I write, may result immediately from "the fibrils of the nerves," acting on the tendons and muscles; but the question is, what is the primary or ultimate cause? What moves the nerves? It is a volition, something as dissimilar to matter and its properties, as sound to smell, or touch to taste. But the author says, that volition, though it accompanies the action, has no influence in producing the motion. By what, then, is it produced? He traces it to the nerves, and here he stops. But, we repeat the question, what moves the nerves? Do they move without volition? Are our motions and actions involuntary?* The author must either affirm this, or he must admit, that the motion of nerves, fibrils, and muscles, is ultimately caused by the determinations of the will.

But, whether the Theist adopt or reject the hypothesis of an immaterial principle in man, he will not allow, that, because we

* The term *involuntary* is here used in its philosophical sense.

perceive no motion produced in matter, but by the agency of other matter, we are therefore to conclude, as if sense were our only source of knowledge, or, as if our perceptions were the sole standards of possibility, that no motion is possible, unless by a material cause. We are too prone to dogmatise beyond our limited capacities, and to confine all modes of existing and acting within the sphere of our narrow and momentary experience. The Theist acknowledges, that matter may possess properties and powers; but beholding these so regulated and controlled, as to produce beneficial effects, he is rationally led to believe, that they are the ordinations, or under the government, of an Intelligent Being, uniting in Himself, as the Self-existent Author of all power, every possible perfection, with which perfection, a substance material, discerptible, and changeable, is utterly irreconcileable. And, though he thus ascribes the phenomena to a higher than a physical cause, he does not, by this reference, leave the language of philosophy; his designation of proximate causes remains precisely the same. But it may be truly,

and, as we conceive, with tenfold weight retorted on the Atheist, that, having never seen a projectile force applied to the earth, or a centripetal force exhibited, but the phenomena simply, the moment he supposes any such force to have a real existence, he abandons the province of philosophy, which is established on facts, and, resorting to hypothesis, indulges in conjecture. The motion of the earth, and the laws of that motion, we know; the ultimate cause, as either material or immaterial, is not within the scope of the physical inquirer.

He proceeds next to present us with one or two extraordinary positions. "The third law of motion is certainly understood by us to be always true in the material world, and therefore we contend, that it is universally true. Nothing can be moved, which is not corporeal. Newton knew no example of motion in bodies, where there was no reaction. . . . . Whatever contradicts all our experience, is as much a contradiction as any thing can be, because the evidence of demonstration itself rests

ultimately on our experience." We are then informed, "that all bodies have a tendency to move in straight lines; and if it be supposed, that an immense concourse of atoms endeavoured to move to a common point from all directions, it is evident that they would form a globe."

These observations conclude the argument, by which he attempts to prove, that the projectile force is that of a material substance. And here we have a repetition of the same gratuitous assertion, and the same illegitimate conclusion, accompanied with a proposition, which every reader, who has devoted but the slightest attention to the nature of scientific evidence, must pronounce to be false.

He affirms, that if it be true in the material world, that action and reaction are equal and contrary, it is universally true. What is this but to assume, either that there is no other than material substance, or that the laws of matter, and the laws of mind as an immaterial being, are precisely the same. The former alternative is an irrational assumption, and the latter

is absurd. He perceives nothing but matter, and he concludes, that nothing but matter exists. If a nation of blind men were to affirm, that light and shade can have no existence, would he assent to their assertion? That man, however highly he may estimate his own powers, priding himself on the expansion of his intellect, and the soundness of his philosophy, must have a narrow mind and contracted views, who can have the vanity to believe, that his five senses are the measures of possible existence, or that what is true of matter is true universally.

Hobbes, a much better logician than the author, and in greater consistence with a truly philosophic spirit, maintained, that "experience concludeth nothing universally." And here we may pertinently address the Sceptic, in his own forcible and impressive language. "Of what account are you in the universe? You are the creature of an hour. You know neither how you are, nor what you are. Is it then for you to point to eternal truth, to determine what is universal law, or to say, here

are the limits, which Omnipotence cannot pass." The inconsistency of Sceptics is indeed singular enough, affirming opinions mutually irreconcileable as the argument, which they are urging, may happen to require. At one time, nothing can exist, which is not an object of sense; at another time, substances, and attributes may have being, of which we, "living in a corner of the universe," can have no conception *. At one time, they represent man as a creature of very limited powers, his habitation a peppercorn †, and himself of no more importance than the ant or the emmet; at other times, man is exhibited, as knowing all that is possible in the economy of the universe. Thus, our experience is either every thing, or nothing, as it suits the purposes of the infidel to maintain.

With one remark more, on the logical accuracy of the author's assertion, we shall now dismiss it. He states, that the third law of motion, respecting action and re-

* Hume's "Dialogues on Natural Religion."

† La Place's "Système du Monde."

action is true in matter; he therefore concludes, that it is universally true. This is a singular specimen of metaphysical acumen, and dialectic deduction. Either immaterial substances exist, or they do not exist. If he takes the latter alternative, and asserts, that all is matter, is it not a palpable truism to tell us, that a law, true in matter, is true universally? If it were certain, that our planet were the only body in existence, would it not be a wonderful discovery, that what is true of *it* is universally true? Yet this is his argument, and this his conclusion, *What is true of the whole, is true of the whole.* But, if he could be supposed to take the other alternative, which he controverts and denies, then by what argument does he prove, that what is true of a material substance is true also of a substance, which has no resemblance to matter. Would he apply the laws of sound to the phenomena of sight? Would not the opposite conclusion be more just, that what is true of matter, cannot be true of its contrary? His argument is either nothing but an identical proposition, or it is absurd.

"Newton," he says, "knew no example of action in bodies, where there was no reaction." Will any reader, who has the common sagacity to distinguish between physical facts and metaphysical science, be deluded into a conclusion so illogical and false, as the author by this observation intends? Newton's researches did not extend to pneumatology. His investigations were confined to the laws of physical agency. Because action and reaction are universally observable in material substances, does it follow, that these are the only existent beings, or that material agency is the only possible agency? But we trust, that enough has already been said, to guard the reader against the conclusion, which the author vainly tries to establish. It may, however, be useful to remark, that Newton delivered it as his firm persuasion, that the universe is the production of an Almighty Cause, and that its Author is a Being, "*incorporeal*, living, intelligent, and omnipresent." This profound and enlightened philosopher perceived no inconsistency between these apprehensions of Deity, as a Being purely immaterial, and the be-

lief, that in material substances action and reaction are equal and contrary. But, if Newton had maintained the Sceptic's opinion, we should, without hesitation, have charged him with presumptuously dogmatizing, in assuming human experience to be the criterion of possibility; and while we should have admitted the truth of the physical law, we should have rejected the inference, as an arrogant assumption.

The author attempts to justify his conclusion, by an affirmation, which may astonish the reader by its boldness, but is not likely to be honoured with his assent. He maintains, "that whatever contradicts all our experience is as much a contradiction, as any thing can be." If the author could establish this proposition, we should find some difficulty in resisting the inference, which he draws; but his judgement is demonstrably founded in error, and betrays an ignorance of the nature of evidence, which can be hardly reconciled with his general discernment. No contradiction to universal experience can be so great a contradiction, or so incredible, as a metaphysical contradiction. The for-

mer is merely false; the latter is absurd. The contrary of a physical universality is yet possible: that of a metaphysical universality is absolutely impossible. He is truly a bold and fearless dogmatist, who will affirm, that whatever is repugnant to experience is as great a contradiction, as that a whole is greater than a part, or that the halves of equals are unequal. But let us hear his reason for asserting so extraordinary a proposition. "Every contradiction to all our experience is as much a contradiction as any thing can be, because the evidence of demonstration itself rests ultimately on our experience." Here the author labours under an egregious error, confounding physical with metaphysical truth. A proposition so repugnant to the generally received philosophy of evidence, should have been accompanied with argument in its support, and should not obtrusively have claimed our assent, on the simple authority of the author's assertion.

Abstract or notional sciences, as they have been termed, the subjects of which are purely the relations of our ideas, have

no dependence on matter of fact, or real existence. Sense is necessary to furnish the simple idea, but the demonstration is founded on definitions and assumptions, nor does its validity rest on experience, as its basis. Mathematical science treats of things supposed, not of things, which actually are; and the demonstrations of Euclid would be unquestionable, if not a single square, or triangle, or circle, had ever existed. When the Algebraist investigates a relation, or evolves a scientific truth, does he ever appeal to fact, or real existence, to establish a single link in his chain of evidence? From a relation hypothetically assumed, or previously demonstrated, he deduces other necessary relations; and it is with signs, not with substances, with which he is conversant. When he proves, that a definite number, increased *ad infinitum*, may yet never equal another definite number, is his argument resolvable into experience, or does he ever condescend to appeal to matter of fact? Does he argue from sense, or by induction? Can experience ever furnish any notion of infinity? But without descend-

ing to particulars, we would refuse our assent to the author's theory, on these two general grounds: 1st, That no inductive process can possibly amount to demonstration. Repeated measurements may lead me to believe, that the opposite angles made by two mutually intersecting straight lines *are equal;* but no measurement, with all the accuracy of which my senses may be capable, and all the aid which the nicest instruments may afford, could demonstrate, that they *must be equal*, and that the contrary proposition would imply a contradiction. And if the possibility of error in the measurement were excluded, and the induction from multiplied trials deemed complete, the conclusion would still be, that it *is* true, but not, that it *must be* true*.

* Some philosophers have attempted to shew, that there is no real difference between physical and mathematical evidence, and that every demonstration, in the science of mathesis, is ultimately resolvable into a process of induction. This theory was not new, when Dr. Beddoes published his work, in the year 1793, the object of which was to prove, "that mathematical sciences are sciences of experiment and observation, founded solely upon the induction of particular facts, as much so

2nd. Though perception or experience is necessary, to furnish us with the notion of extension, it neither constitutes the principle, on which any demonstration is founded, nor the evidence, on which it

as mechanics, astronomy, optics, or chemistry." (p. 15.) We perused with attention this work, when it made its appearance, and the judgement, which we then formed of its character, remains unaltered. The author, in proof of his theory, refers to the fourth proposition of the first book of Euclid, in which the demonstration is conducted on the supposed superimposition of the two sides of one triangle, to the analogous two sides of the other. Now it is doubtless true, that the several coincidences, stated by Euclid, must follow, from the supposed application of one side in one triangle, to its analogous side in the other. But why? Is it, because the experiment proves it? We apprehend, not. It is, because we intuitively perceive, from our notion of equality, independently on any trial, that these coincidences must follow. "As no one", says Barrow, "believes a mathematical axiom, because he observes that it happens accordingly," so we may remark, that we believe the coincidences affirmed in the demonstration, not because we find them take place, but because, from the relation of equality, we know, that they must take place. See Mr. Stewart's "Elements of the Philosophy of the Human Mind," vol. ii. pp. 189—202., where the subject is fully discussed; and also Dr. James Hutton's "Investigation of the Principles of Knowledge," in which the reader will find several metaphysical observations, which conduct to the same conclusion.

proceeds. It is not necessary, as has been remarked, to the truth of the 47th proposition in the first book of Euclid, that a right-angled triangle should ever have existed. Nor perhaps, indeed, was one ever constructed with mathematical accuracy, though the excess or defect of the apparent right angle might be vastly too small for our senses to detect. Yet the demonstration proceeds with equal certainty, because it is not the perceived, but *the apprehended or conceived*, relations, which are the subjects of comparison. To tell us, that demonstration originates in perception, argues nothing; but merely amounts to this, that if we had no notion of extension, acquired through sense, the science of extension would have no existence. This can be of no avail to prove, that our scientific deductions, embracing pure abstract relations, as existing in our conceptions, rest on experience as their foundation. For these reasons, then, we deny, that a physical contradiction is equal to a metaphysical, or that demonstration ultimately depends on experience, for the validity of its evidence.

The reader must have perceived, that it is the object of this Sceptic to prove, that no Newtonian can consistently be a Theist, and that the philosophy of Newton excludes at once the necessity and the possibility of an intelligent "Immaterial Mover." For this purpose, he must assume, that every consistent Newtonian must admit, that the properties of matter are eternal and underived, maintaining, at the same time, that he must resolve the whole of the planetary phenomena into their sole and effective agency. To this assumption it might be sufficient perhaps to oppose the fact, that Newton believed in the existence of a Supreme Immaterial Being. The Sceptic, I am aware, hesitates not to affirm, that Newton was at variance with himself, and that this celebrated astronomer "seems not always to have been guided in his philosophy by his religion." After the observations already offered, it can hardly be necessary to expose the falsity of this assertion. Newton did not maintain either the eternity of matter, or the innateness of its properties. The ques-

tion with him, as a physical enquirer, was not, whence they are, but what they are; not what was their ultimate cause, but by what laws they are governed, and what are their effects. It is obvious also, that by the solution of this question, the truth of his theory is nowise effected. The Theist then, while he acknowledges the exhibition of material properties, whether he regards them as the communications of intelligence and power, or as resulting from the immediate agency of these attributes, may consistently, as far as their mere manifestation is concerned, adopt the Newtonian theory.

To affirm, that, if we admit Newton's law of action and re-action, we must deny an Immaterial Mover, is to assert a conclusion which, we confidently maintain, that neither did Newton ever anticipate, nor will the axiom, by any rational construction, justify. Our assent to the Newtonian maxim does not require, that we should believe also, that, what is true of matter, is true universally, that all possibilities are limited to our experience, and that we have

no evidence in the constitution of our own minds, that, what is not material, may move material substance.

A few observations on some other arguments of this subtle logician shall conclude the section.

"That which is finite and corporeal can have nothing in common with that, which is infinite, and immaterial; and it would be absurd to say, that there is any other substance than matter, which is solid, and extended, since matter is always partly at least described by these qualities."* Is not existence common to corporeal and incorporeal beings? Or, if this should be pronounced a *petitio principii*, for that no immaterial being can exist, we are at least justified in affirming the possibility of such an existent, until the author has proved, that no substance is possible, which is not visible or tangible. And what is the author's proof? A more irrelevant, and more inconclusive argument was never offered to philosophic exàmination. He tells us, that it is absurd to say, that any thing but matter exists, which is solid and extended. Why is this

* P. 231.

absurd? The reader will mark the answer. "Because matter is always partly at least described by these qualities." We are, therefore, according to the author, to reason thus. Matter is solid and extended; nothing without these qualities can exist: therefore nothing but matter can exist. Can a more palpable paralogism be conceived? Nay, it sinks below the rank of a paralogism; for, in the most egregious sophism, there is at least the semblance of connection between the premises and the conclusion. Here there is none. Will any man of common understanding admit such an argument as this? *Matter is partly described as solid and extended; therefore nothing can exist, but matter.* Yet this in truth is the author's argument, and this his conclusion.

He proceeds. "A substance is undoubtedly that alone, which can perceive, or understand: and since one thing, having nothing in common with another, must be in a state opposite to it, it is impossible for us to conceive, how they can be understood, or perceived by each other."*

* P. 232.

The author has here favoured us with one of Spinoza's axioms; and had he adhered to the definition given of substance by that consummate sophist, he would have escaped the egregious inconsistency, in which he has involved himself. He has elsewhere defined a substance to be that, "which supports its attributes,"* and here to be, "that alone which can perceive or understand." We ask, Does matter support its attributes? Matter then must be a substance. Impenetrability and extension are, by his own admission, attributes essential to its being. But a substance is that "alone, which can perceive or understand." Does matter essentially possess perception and thought, as it is essentially solid and extended? If not, how can it, consistently with the second definition, be called a substance? Is the table, on which I write, the support of attributes? The table then is a substance. Can the table perceive or understand? No. The table then is no substance. It is, at once, that which it is, and that which it is not.

* P. 233.

The axiom of Spinoza we shall afterwards have occasion to examine. We shall here only observe, that though we may not be able to comprehend, how an immaterial being can be percipient of a material substance, our ignorance furnishes no solid argument against the possibility of the fact.

The author next favours us with one of the leading arguments of Spinoza. "The immaterial, infinite, eternal substance, of which Theophilus has spoken, has nothing in common with that, which he calls material, finite, and perishable. How should it be possible then, that the former should have produced the latter? There are certain truths, by which we must abide; and upon no account are we excusable, if we knowingly admit contradictions. If then there be a truth, it is, that a thing cannot impart that, which it has not—if there be a contradiction, it is the reverse of this axiom." . . . "Things which have nothing in common, can never be the intentional causes of each other."

We remark here a strange inaccuracy of conception. Two things cannot be

mutual causes of existence, whether they have, or have not, one common property. If A exist before B, he may be the cause of B, or conversely; but in this there is no mutuality of causation. A, as an antecedent, causes B, or B causes A. But if neither exist, how can they be supposed, without the most egregious absurdity, to cause each other?* Can a nonentity act?

But it may be pertinently asked, How has the author learned, that one thing cannot cause another, unless they have some common property? Reason teaches no such position, and a limited experience cannot be the standard of absolute possibility, nor a temporary and negative experience prove a positive and eternal fact. His conclusion, however, rests chiefly on the maxim, that a thing cannot impart to another that, which it has not. Now, *to impart*, implies the communication of a

* Spinoza has correctly expressed the proposition. "Quæ res nihil commune inter se habent, earum una alterius causa esse non potest." *Pars I. Prop. 3. Opera Posthuma.*

quality or property, by one substance to another, so that the latter participates in an attribute of the former, the one retaining, and the other receiving a portion of that attribute. But to give a portion, and to retain a portion of what one has not, is a contradiction. This argument, however, avails nothing against the possibility of existence being imparted. Existence is possessed, and existence is communicated. But the author's object is to prove, that an immaterial being cannot give a material existence, inasmuch as this would imply, that he gives, what he has not. This argument, which belongs to Spinoza, we shall have occasion subsequently to examine. In the mean time, it may be here remarked, that, if the proposition were, that no being can give to another that, which it has not the means, or the faculty of giving, we should assent to it as universally true. But there seems to be no absurdity or contradiction in believing, that an intelligent agent may communicate to a substance a quality, which makes no part of his own nature, and which there-

fore he does not possess. A chemist converts a solid into a fluid body, or into a gaseous substance. He gives it qualities, which it had not before. The caloric, which he infuses into it, is not given from himself, though communicated by him. The metallurgist gives elasticity to iron—the quality makes no part of his own nature—he gives, in one sense, what he has not, but what he has, notwithstanding, the means of giving. We perceive, then, no contradiction, or absurdity in maintaining, that a being may exist, capable of giving existence to others, in a mode dissimilar to his own. An immortal being cannot be said to have the character of mortality, as belonging to his nature; but there is no absurdity in the proposition, that he has the power of giving existence to beings, subject to death. If so, may not an immaterial being have the power of creating material beings*. Materiality cannot be predicated of his nature; but he may have

* An acute and ingenious writer has affirmed, that the maxim here in question is so far from being true, that it implies a contradiction, inasmuch as a cause must pre-

the power or means of giving it. These two things do not appear to be mutually incompatible. We are not sufficiently acquainted with possibilities, to justify us in concluding, that a material substance cannot be produced by an Incorporeal Being, possessed of omnipotent power.

Substance he considers to be "that which supports its attributes. From this we must conclude, that substance is prior to the attributes, which cannot be without its support." "Hence," he says, "it seems impossible, not to understand substance as the cause of its own attributes." Here the author presents us with a proposition figuratively true, and a conclusion obviously false. The Sceptic surely had not to learn, that, when he represents a substance, as supporting its attributes, he speaks metaphorically. But, in whatever sense the expression may be understood, it is evident, that this support can imply nothing more, than that the attributes can have no existence

duce something different from itself, that is, having properties different from its own. *Cooper's Essays, p.* 278.

without the substance, but surely cannot prove the priority of the substance, or disprove the simultaneous existence of substance and attributes. His conclusion is so far from being intuitively evident, or a necessary consequence, that the understanding instantly rejects it. By what process of reasoning can it be demonstrated, that "because substance supports its attributes," the former exists antecedently to the latter. Will the author inform us, what matter would be without extension? If substance exists first, and then its attributes, we call upon him to explain his conception of substance, destitute of every attribute. If he succeed in unfolding this notion to our satisfaction, which, we presume, he will not attempt, his proposition shall receive our unequivocal assent. In the mean time, we deny that substance can have any existence prior to its attributes, and that the argument, if assertion can be called argument, by which he would prove, that matter is the cause of its own properties, is a gross absurdity. It proceeds thus. "*Substance supports its attributes.*" True. "Ergo,

Substance exists prior to its attributes." Absurd. "Ergo, *Substance is the cause of its own attributes.*" Absurd likewise. The author, it is evident, while he quotes a dogma of Spinoza's, mistakes its meaning. He had not, it would seem, the penetration to discern the distinction, which that insidious infidel makes between *attribute* and *affection*, a distinction essential to the consistency of the argument, and of which that subtle sophist studiously availed himself. This difference the author appears not to have apprehended. Hence he has run into this singular absurdity.

"When Theophilus spoke," he thus continues, "of the existence of three distinct substances, one of which is infinite, and the others finite, he involved himself in a manifest contradiction, since that which is infinite, must always include that which is finite. . . . . There cannot be more than one infinite substance, and there can be no substance which excludes that, which is universal. Either, therefore, the Deity is not the infinite substance, or all substantial things are of his essence. But God is infinite; and consequently his substance is

that, which is the sole universal and eternal substance." The intelligent reader will be at no loss to perceive the baleful tendency of these observations. The doctrine, which the author would inculcate, was taught by a certain sect of ancient philosophers, and has been in later times revived in a systematic form by Spinoza, whose doctrine it is our purpose hereafter to examine. The argument, like almost every other, which the Atheist urges, proceeds on the assumption, that nothing does or can exist, but material substance. He reasons from this assumption, as from a fact established by the clearest evidence; for the reader will observe, that he speaks of the *exclusion* and *inclusion* of substances, terms applicable only to matter, as impenetrable and occupying space; assuming, with all imaginable ease and freedom, that every thing, except matter, is a nonentity, as if he were perfectly acquainted with every possible mode of existence, and as if his favourite dogma were an intuitive certainty. But we wish to know, how he has learned, that nothing but matter exists. Is it because his senses inform him of no-

thing else? But are his perceptions the measures of possibility? His senses can teach him only what is, not what cannot be. Their testimony is positive, as to the existence of sensible objects; but how can this testimony prove, or by what rational principle does he infer, that what is not within the scope of his limited senses, can have no existence? It is true, that, if we consult the evidence of sense only, we have no right to affirm, that any thing beside matter does exist; but it is equally true, that sensation is far from being the only source of human knowledge, and that its capacity can no more disprove the possible existence of objects not perceptible, than the sense of hardness, in a blind man, can disprove the existence of colour.

When a vain and spurious philosophy holds up universal experience as a standard of possible existence, we are at a loss to know, whether we should lament the ignorance, or reprehend the arrogance, which such presumption betrays. Is our earth the universe? If not, where is our universal experience? If the universality be confined to our globe, as well might the

oyster, or the insect on the leaf, if capable of thought and speech, argue from its universal experience. It is true, that we perceive numerous other bodies surrounding our planet, all material like ours. And why are they like ours, but because they are presented to like powers of perception? Why do we perceive nothing but matter, but because nothing but matter can affect the sensorial organs? Will the Atheist affirm, that our five senses are the only existing, or the only possible, inlets of knowledge, in the immensity of the universe? Or will he venture to affirm, that the character or qualities of the sensible object, do not depend on the powers of the percipient? Every argument, then, which assumes, that all existing substances and modes of being are within the range of man's experience, and that his perceptions, in his narrow sphere of observation, are the laws of universal being, we reject as the offspring of ignorance and arrogance, unworthy of a philosopher to offer, and a rational mind to admit. "Esse autem hominem, qui nihil in omni mundo melius

esse, quam se putet, desipientis arrogantiæ est." *

When a creature like man speculates on the nature of the Divinity, he is necessarily lost in the immensity of the subject. Incapable of comprehending himself, how can he understand the mode, in which an Eternal and Infinite Being exists? It is an egregious folly, a flagrant contradiction, to imagine, that a finite being can comprehend the nature of an infinite existent. Of the moral attributes of Deity, we can form some conception; his natural and incommunicable perfections form a subject too vast for human comprehension. Here all abstract discussions on eternity, infinity, ubiquity, space and substance, serve no other purpose, than to perplex the understanding, to generate doubts, and to beget a spirit of contention and presumption, while, at the same time, they have a tendency to degrade the Incomprehensible and Adorable Creator. "Who can by searching find out God?

* Cic. de Nat. Deor. lib. iii.

Who can find out the Almighty to perfection?" In the boundless chain of being, there may be, nay, most probably are, numberless other natures, whose mode of existence we cannot possibly conceive. Contradictions our reason necessarily rejects; but, where these are not involved, we should bear in mind, that in all questions of fact, or actual existence, we may be irresistibly convinced, that a position may be true, though we are quite incapable of comprehending, how it can be true. Our perceptions and imaginations are so deeply involved in matter and its modes, that we are too prone to conclude, that nothing can exist, irreconcileable with its manner of existence. This, indeed, seems to be the radical error of the Hyloist and the Atheist. "Sane restat," says an ancient philosopher, "ut qualis Deorum natura sit, consideremus, quo nihil est difficilius, quam a consuetudine oculorum aciem mentis abducere." *

The preceding arguments, it is hoped, will suffice to establish the truth of these

* Cic. de Nat. Deor. lib. ii.

three propositions: 1st. That to assign a proximate cause of any phenomena, is not an admission, that it is also a primary and ultimate cause; and therefore to ascribe properties and powers to matter, does not imply, that they are innate. With equal reason might we infer, that because a watch spring is elastic, its elasticity is uncommunicated.

2d. If the two forces were allowed, either as primary, or only as immediate causes, but resolvable into physical agency, their operation, in order to produce a beneficial effect, would require the direction of intelligence.

3rd. That, though a law true in matter, is not true, in that also, which is not matter, it is a gratuitous and inadmissible inference, that nothing but material substance can exist. If the truth of these propositions has been established, it must be evident, that there is no contrariety or inconsistency in assenting to the Newtonian theory, and at the same time believing in the existence of an "Intellectual Immaterial Author."

SECTION IX.

The hypothesis, that the constitution of this globe, with various changes and modifications, has existed from eternity, examined. The metaphysical argument offered in disproof of this hypothesis, stated and discussed.

SOME Atheists, sensible, it would seem, of the extreme improbability, not to say the impossibility, of accounting for the production of our globe, with its numerous vegetable and animal beings, on the supposition of an original chaos, and fortuitous concurrences, have abandoned this hypothesis, as wholly untenable, maintaining the eternity not only of matter, but of the universe* itself, constituted and governed by the same laws, as now obtain, but having undergone various changes and modifications. They believe, that this

* "Credunt," says Censorinus, "semper homines fuisse .... itaque et omnium, quæ in sempiterno isto mundo semper fuerunt, futuraque sunt, principium fuisse nullum, sed orbem esse quendam generantium nascentiumque, in quo uniuscujusque geniti initium, simul et finis, videatur."

earth had no beginning, that man had no beginning, and that all the organized beings on this globe form one link of a chain, extending through unlimited ages *ab ante*, and to continue hereafter in endless duration. This hypothesis we proceed to examine.

We have already slightly adverted to the metaphysical reasoning employed by Dr. Clarke, to disprove the eternity of matter. We shall now resume our examination of the argument at greater length, as exhibited by Dr. L. Brown, in his "Essay on the Existence of a Supreme Creator," and then enquire into the validity of the reasoning, by which it has been attempted to show the absurdity of the hypothesis, which maintains an eternal series of causes and effects. The argument has been termed, "the argument *a priori*,"* and has been adopted by several

* The metaphysical argument has improperly, as we conceive, been thus designated; for to reason *a priori*, being to reason from the cause to the effect, as from the known piety of an author to the religious character of his works, or from the peculiar genius of a painter to his peculiar style of conception and execution, it is evident,

eminent theologists and philosophers. When we express our conviction, that this species of reasoning is not only perplexing, and unsatisfactory, but also inapplicable and inconclusive, we deliver an opinion, not hastily, or inconsiderately formed. Viewed in the most favourable light, it is too abstruse to be generally intelligible, and is certainly more calculated to confound, than to convince.

"All existence", says Dr. L. Brown, in his Prize Essay, "must have some cause. This cause must be found either without, or within, the existing substance. If this cause is external, or, in other words, if existence has been caused at all, it is referrible to what, in the last chapter, I have denominated and explained to be contingent. If existence is ultimate and referrible to no other cause, and the substance or being, to which such existence belongs, possesses in himself the ground of his being, he is

that this species of reasoning must be inapplicable to the question. For, by this mode of argument, we descend from the nature of the cause, as known, to the nature of the effect. In the question of Theism, we have, on the contrary, to prove the existence of a First Cause.

necessarily self-existent: or, in other words, we have arrived at the first principle of existence, in which the mind acquiesces, and beyond which it neither can, nor seeks to go."

The author's first proposition, that "all existence must have some cause," taken in the abstract, without explanation, neither of the contending parties may be inclined to admit, the one maintaining that Deity, and the other, that the universe, had no cause. Its truth, however, will not be disputed, if we allow the propriety of saying, that a self-existent being possesses, in himself, the cause of his own existence. This notion, however, appears to us to be somewhat incorrect, and the expression to involve a violation of the strict meaning of the term *cause*. To say, that any thing is the cause of itself, is to assert an absurdity; and to say, that any being contains within himself the cause of his existence, though an affirmation not precisely the same, is yet too nearly equivalent to it, to be wholly unobjectionable. The cause of any being must necessarily be different from the being himself. If the existence of the

Deity has any cause, the cause must precede the existence; for cause implies effect, and bears to it the relation of antecedent to consequent. Self-existence is an attribute of a being requiring no cause, nay excluding the possibility of a cause. It may be remarked also, that, while the author sets out with affirming, that all existence must have some cause, he in the very next sentence speaks hypothetically, as if existence might be uncaused. Is there not some inconsistency in saying, "that all existence must have some cause," and then adding, "if existence has been caused at all?" This is to assert a universal truth, and at the same time, to suppose it susceptible of limitation. It is to affirm a proposition to be necessarily, and yet only contingently, true. A universality, admitting exceptions, is a manifest contradiction.

"That only," observes the author, "is strictly necessary, the non-existence of which is impossible," and he adds, "If the world be necessarily existent, it is impossible it should not exist."

Whatever exists by the necessity of its

own nature, cannot but exist. To suppose the possibility of its non-existence, would be to suppose a contradiction—that not to be, which must be. To suppose, that there is no necessary, or self-existent being, would be equally absurd; for it would imply, that something might originate in nothing. The Atheist acknowledges, that there is no contradiction in supposing it to be Deity, and perceives no contradiction in supposing it to be matter; admitting, at the same time, that, whichsoever of the two it may be, that being cannot but exist, and that the contrary hypothesis would involve an absurdity.

In order to prove that matter is not necessarily existent, the author reasons thus: "If the world be necessarily existent, it follows, that it is impossible it should not exist, and that it should ever change its form, or mode of existence. For whenever any change is introduced into any substance, it must either be such, as destroys its essence, or such only, as alters its form. If it destroy its essence, that substance cannot be necessary, because it has ceased to be. If the form of

it only be changed, it is equally plain, that the necessity of its own existence under that form is removed; for it exists now under another. In either case, the radical inherent, and absolute notion of necessary existence is taken away." Let us examine this argument.

"If the world", observes the author, "be necessarily existent, it follows, that it is impossible, that it should not exist, and that it should ever change its form, or mode of existence." The former of these consequences is self-evident: its truth is implied in the meaning of the terms. But how does the latter of the consequences follow? Might not an opponent urge, that matter may exist in a variety of forms, and yet remain indestructible? If the form be changed, is it a necessary consequence, that the substance be annihilated? The opponent may not contend for identity of form, but necessity of substance. And, if we reason as Theists, we must admit, that He, who created, can annihilate; but, unless we beg the question, what evidence have we for believing, that a single particle of the material universe has been

destroyed, or that it is destructible by any power, but one, the existence of which power we are bound to prove, and not to assume. An opponent might admit the transformations of matter, but deny, that perpetuity of form is necessary to self-existence of substance. That the elements exist by the necessity of their own nature, is his hypothesis; and to their transpositions and transmutations he ascribes the formal existence of the universe. Matter he considers to be eternal and necessarily existent, its forms to be changeable and various. And, though he would allow, that no form is permanent, or self-existent, formal identity not being essential to substantial existence, he might contend, that no form, which matter can assume, is absolutely contingent, and that every change is the necessary result of the previous circumstances, each cause being capable of producing no other than its proper effect. It would not therefore follow, that, if the world were necessarily existent, it would be impossible for it to change its form. A change of form will not disprove necessity of substance, and every change may be ne-

cessary, as resulting necessarily from antecedent circumstances. But let us hear the author's reasoning.

"When a change", observes the author, "is introduced into any substance, it must either destroy its essence, or alter its form." If by *essence* be meant, what is essential to its existence, the position will be conceded; it is a self-evident truth. If *essence* imply simply that, which makes a substance to be distinctively in its nature what it is, it may be contended, that the essence may be changed, and the substance not annihilated. Now, it is a self-evident truth, that, if any change can destroy the essence of matter, in the former acceptation of the term, the substance cannot be necessarily existent. But the truth of the conclusion depends on the truth, or possibility, of the hypothesis. Supposition must not be substituted for fact. If matter, may, by any change, be annihilated, to ascribe to it the attribute of self-existence, would be absurd. But by what argument, either from reason, or experience, can it be proved, that any such change is possible? It is surely a mere truism to state,

that, if matter can, by any change, be annihilated, it may cease to be, and is therefore not necessarily existent. What is possible, is not impossible; but in order to deduce a conclusion from possibility, the possibility must be proved. If it can be shown, that a single atom has been annihilated, it will follow, that matter does not exist necessarily; but it cannot be received, as a legitimate argument, to state, in order to disprove the self-existence of matter, that, if any change can destroy its essence, its essence will be destroyed, unless that hypothetical possibility be proved by reason, or by experience. In reply to the other alternative respecting a change of form, this transmutation neither involves destruction of substance, nor is it incompatible with the hypothesis, that every change is the necessary result of the previous circumstances. The author's argument then, in order to show, that matter cannot be self-existent, comprehends two alternatives, 1st. That, if the essence be destroyed, it cannot be self-existent. Granted. But the supposition must be proved to be a fact, before the conclusion

can be admitted. The second is, that, "if the form be changed, the necessity of its existence, under this form, is removed." Granted also; but this does not exclude the possibility of its existence under another form, or imply the annihilation of the substance itself. In fact, the very admission of a change from one form to another, implies its continued existence as a substance.

In speaking of the transmutation of forms, which matter is continually undergoing, he observes, "There is no contradiction, in supposing them never to have existed, or be changed, or cease to be." If by *contradiction*, the author means metaphysical contradiction, it is true. There can be no metaphysical contradiction in any supposition, which does not involve an absurdity, or a contradiction in terms. While it is self-evident, that there must be some self-existent being, there is no contradiction in supposing, that either Deity may not exist, or matter not exist. But as it would be a contradiction to suppose, that Deity, as being self-existent, could cease to exist; so it would be equally a

contradiction to suppose, that matter, if existing by the necessity of its own nature, could ever cease to exist. Such supposition would involve a palpable absurdity. But is it equally a contradiction to say, that matter, if self-existent, can never change its form? Or, is there no distinction between physical, and metaphysical contradiction?

"Since the form and constitution of the world", says Dr. Brown, "are of this nature (that is, perpetually changing)—then, that they cannot be necessary, or supposed not to be otherwise, than they really are, is as clear and incontrovertible a proposition, as can be stated." This proposition, which appears to the author to be so clear and incontrovertible, will not, it is feared, be admitted by an opponent, as either evident or incontestable. How does mutability of form prove contingency of effect? The term contingency refers to our knowledge of phenomena, as certain or uncertain, but not to the phenomena themselves. Between objective and subjective certainty there is a manifest distinction. The forms of matter may be

incessantly changing, and yet each change be the necessary effect of the previous circumstances. If any effect, as the author supposes, could be other, than it really is, then the connection between cause and effect would be dissolved, and the same physical cause, in the same physical circumstances, might produce either of two effects. This notion, we apprehend, involves a physical impossibility. If a stone, dropped from the hand, could either ascend or descend, if the abstraction of caloric could either congeal water, or evaporize it, or if any one cause, all circumstances taken into account, could be accompanied with any other than its proper effect, what perplexity and confusion would be introduced into the physical and intellectual world? To argue from change of form, to contingency of effect, is a manifest fallacy.

"Contingent existence", he elsewhere observes, "is that, which depends on some antecedent for its production; and however certainly it may follow, on the supposition of such cause, or on such and such predispositions, and concatenations of

proximate causes, may be supposed either not to have been at all, or to have been under a different form, or aspect." If any one supposed definite cause will be certainly followed by any one definite effect, that effect is physically necessary, in whatever principle its necessity may originate, whether in the ordinations of Deity, or in the assumed independent powers of matter. We can, indeed, suppose the effect not to have been, (for what can we not suppose?) or we can suppose it to have been different, as we may suppose, that the presence of the sun would bring darkness, and his absence produce light, but the mere supposition cannot alter the constitution of nature, or convert a physical contradiction or impossibility into a matter of fact. It cannot shew, that, from any definite cause, any but one definite effect can follow. There is no metaphysical contradiction in supposing, that such a river as the Tiber might never have existed, or that the Thames might have flowed into the Atlantic; but the suppositions would imply a physical contradiction; a contradiction to the laws of nature: for no one surely

will deny, that the existence of the one, and the course of the other, are the necessary results of certain operating causes, and that from these causes no other effects could have followed, than do follow. There is no metaphysical contradiction in supposing, with the author and Dr. Clarke, that, instead of six primary planets *, there might have been sixty, or any other number; but unless we beg the question, and assume the existence of a Supreme and Omnipotent Being, at whose word, we acknowledge, thousands of worlds may rise into existence, an opponent might contend, that, from the previous circumstances, none but the present number could have resulted. He might deny the existence of contingency, affirming the laws of nature to be unalterable, and that not a single change has taken place from eternity, but what necessarily proceeded from antecedent causes. He distinguishes between that metaphysical necessity, which refers to the immutable relations of our ideas,

* When Dr. Clarke wrote, there were only six primary planets known. Dr. Brown adopts the illustration, without correcting the error.

excluding absurdity and contradiction, and that physical necessity, arising from the constitution of nature, by which every effect necessarily results from the previous circumstances, admitting, perhaps, at the same time, that there is no absurdity in supposing, that the laws of nature might have been different from what they are. But while he may possibly acknowledge, that there is no absurdity in the supposition, he denies the possibility of the fact, contending, that the laws of nature are immutable.

"If it is maintained," says the author, "that all present existence is necessary, and that no part of the astonishing system of the world, and of the constant succession of causes and effects, which it exhibits, can be other, than it really is, or can cease to be, it must unavoidably follow, that every individual substance, as a component part of the whole, must also be self-existent; and although nothing besides itself existed, must still independently possess in itself the ground or reason of its existence. For whatever is self-existent, must be independent of every other being,

and have within itself the ground or reason of its being. But do the parts of the world, and all their various forms, exist in this manner? Not one part, not one substance in the sensible universe, subsists in an absolute, or unconnected state; but an unbroken chain of mutual dependence pervades the whole compass of nature." Here the author reasons from dependence of form to dependence of existence, as if the latter were necessarily involved in the former, the illegitimacy of which conclusion has already been exposed. An opponent might assert, that, though the forms of matter are perpetually changing, matter itself is self-existent, and that every existing phenomenon "can be no other, than it really is," being one of the links of an eternal chain of antecedent necessary causes and effects. He may say with the author, "break one link, or separate one part from the rest, and all are affected, and altered or deprived of some support, by which they are upheld," but he may deny, that a single link can be broken.

To conclude. The author's argument is partly hypothetical, and partly founded in fact. His first alternative is mere hypo-

thesis. *If any change, introduced into a substance, destroy its essence, that substance is not necessarily existent.* The truth of the conclusion depends on the possibility of the supposition. Is it self-evident, or has the author proved, that the essence of matter can be destroyed? He has not attempted it—the argument, therefore, rests on nothing but hypothesis. The second supposed alternative is founded in fact, but does not warrant his conclusion. *If any change introduced into a substance alter its form, it cannot be necessarily existent.* Material changes are visible and admitted; but until it is shewn, that mutability of form is incompatible with eternity of substance, the reasoning is inconclusive.

The argument, as exhibited by Dr. Clarke, in disproof of the necessary existence of matter, has been already examined. We shall now proceed to state the reasoning of the same author, and that, also, which has been adopted by Hartley, Wollaston, and other metaphysicians, in order to demonstrate the absurdity of the hypothesis, which maintains the existence of an infinite series of causes and effects.

SECTION X.

Arguments adduced to disprove an eternal series of causes and effects.

If any example were necessary to illustrate the inapplicability of reasoning, purely metaphysical, to any question of actual existence, and the facility with which it may be evaded, or subverted, the abstract arguments offered to disprove an eternal series of causes and effects, furnish a decisive and striking instance. To force into the service of Theism a species of evidence, which the subject neither requires nor admits, the existence of Deity resting on a a surer basis, which no sophistry can shake, betrays, we will not say, ignorance of the subject, but extreme indiscretion, and is detrimental to the cause. To omit the statement of these arguments entirely, would be to incur the just reprehension of those, who have regarded, and may, after our examination, still regard them, as unanswerable and conclusive. And,

after stating, to dismiss them with a brief assertion of their invalidity, would be an act of disrespect to the high authorities, by which they are supported, while, on the other hand, to offer no opinion, would be inexcusably uncandid on the part of the author.

It is thus argued. Let us take a series of causes and effects, supposing, for example, z to be the effect of y, y of x, x of v, and continue this series through any number of terms, suppose to a, it is evident, they say, that the last term ascending, must either be an effect without a cause, or it must exist independent on any cause. It cannot be an effect without a cause; for this alternative involves a contradiction. *Cause* and *effect* are correlative terms, and imply correlative ideas, the existence of the one necessarily involving that of the other. If the other alternative be adopted, that the last term in ascending is independent, and self-existent, it must be regarded as the great original of all, and here the mind naturally rests. It proceeds no further. But may not an opponent reply, that we are not to

stop at *a*, or at any other term, for that *a* must be considered as the necessary effect of the immediately antecedent term, and so on *ad infinitum?*

To this it is answered: If there be no possibility of stopping at any given term of the series, without involving the absurdity here exposed, will this absurdity be diminished by continuing the series onward to a million of terms beyond that? Does the understanding reject, with less repugnance, the idea of an uncaused effect, after ten millions of terms, than after twenty or thirty?

The adversary may admit, that to stop at any term, would involve the absurdity of an uncaused effect, a conception irreconcileable with metaphysical possibility. But he may contend, that his hypothesis is not chargeable with this absurdity, because the series, which he maintains has no limit —no term, at which we can stop. "If the difficulty", says Paley, "were diminished, the further we went back, by going back indefinitely, we might exhaust it. Where there is no tendency, or an approach to a limit, as we increase the number of terms,

by supposing the number to be, what is called infinite, we may conceive the limit to be ascertained; but where there is no such tendency, nothing is effected by lengthening the series." The observation is just; but it avails not against an opponent, who admits, that, in searching for a first term in his infinite series, there can be no approach to a limit—that there may be a difficulty in his hypothesis, as there must be in all speculations on infinity, whether of time, or of space, or of causes and effects,—that this difficulty cannot be diminished by going backward, observing that infinity has no limit, and that in matter existing from eternity, there may be an infinite series of causes and effects, an infinitude of changes, modifications and forms, to the commencement of which it is as vain to attempt approaching, as it is to exhaust eternity.

And, though it is certainly true, that each term of the series must be an effect, before it can operate as a cause, and the series, therefore, might be pronounced to be a series of effects, which is absurd, the opponent may evade the argument, ad-

mitting an infinite series of effects, but contending, that an infinite series of effects implies an infinite series of causes.

"But", says Paley, "an infinite chain can no more support itself, than a finite chain." An opponent would assent to this proposition; but might he not deny, that the cases are analogous? A chain cannot support itself, because it is acted upon by a power exterior to itself; it obeys the law of gravitation. But there is no external power, by which the supposed infinite chain of causes and effects can be moved, or disturbed. The very notion, that it requires support, implies the absurdity of an effect, without a cause. The analogy is clearly false, and the argument inconclusive.

"An infinite succession of finite beings", says Hartley, who, in his argument, is followed by Priestley, "is impossible, because no finite being can comprehend himself: there must therefore be an infinite Being, who comprehends himself and all other beings." This indeed is a conclusion, which spontaneously suggests itself to every mind, governed in its judgements by

the natural dictates of reason. But, if we were called upon to state the medium of proof, by which the abstract proposition could be evinced, that the incomprehensibility of the mode, in which nature is said to operate, excludes the notion of necessary agency, or the medium of proof, by which it could be shown, that to the existence of a finite being the existence of an infinite Being, capable of comprehending him, is necessary, we are at a loss to know, what satisfactory principle to offer, as an abstract, and self-evident truth. How repugnant soever the Atheistic hypothesis may be, and we pronounce it palpably repugnant to acknowledged analogies, to all our reasoning from experience, and to the established associations, to which Priestley refers, a metaphysical refutation of it, or an establishment of its contrary, on the abstract ground, that a finite being requires an infinite being to comprehend him, seems to be unattainable.

When Hartley advances the general proposition, that no finite being can be taken at the highest, and that the question, Why not a higher? will recur, until we

come to a being, whose essence exhausts all possibility, and who no longer admits the query, Why not a greater? he adduces an argument, in which the mind naturally acquiesces, but which the Atheist, by his infinite series, finds it easy to elude. The latter will urge, that a scale of finite beings, rising successively in excellence, makes no part of his hypothesis, and that it is as impossible to exhaust an infinite series of finite beings, as to limit eternity. But the argument is substantially the same with that of Dr. Clarke, which we now proceed to examine.

"If we consider", says this eminent metaphysician, "the endless progression as one series of dependent beings, it is plain, 1st, That it has no cause of its existence *ab extra*, because the series contains within itself every thing, that ever was; and 2dly, That it has no cause of existence within itself, because not one individual of this series is self-existent, or necessary. And where no part is necessary, the whole cannot be necessary. Therefore it is, without any cause of its existence."

That this series has no cause of its ex-

istence *ab extra* is evident, because nothing exterior to it exists. Is it equally clear, that, because no one term of the series is self-existent, the series cannot exist? Is self-existence in any of the terms necessary to the being of such a series? If so, by what argument is this demonstrated? Though there is no self-existent term, is not every term necessarily existent, as necessarily resulting from the term preceding?* And let us travel backward through myriads of terms, we shall be still as remote from a limit, or a beginning, as when we set out. An opponent may admit, that there is no self-existence in respect to form, in any of the terms, nay he will deny, that there can be any; but he denies, at the same time, that the series is impossible, because this self-existence is excluded; and he may call on the Theist to disprove its possibility, by any argument, which does not proceed on a *petitio principii*.

It will not escape the observation of the attentive reader, that Dr .Clarke speaks of

* The Atheist maintains the eternity of matter. The argument, therefore, refers to a series of changes and forms.

the series, as a whole, and on this conception chiefly his argument hinges. But is this allowable? Does not the term *whole* imply limits? And can that have any boundary, which is acknowledged to be infinite? Will the adversary admit, that an infinite series, of which all the terms are of equal magnitude, can be considered, as a whole? A mathematical series, decreasing *ad infinitum*, may be regarded, as a whole, being equal to a definite quantity, each descending term of the series approaching nearer to pure nihility, than the preceding term; but in a series of equal magnitudes, this comprehension under one whole is inadmissible. Eternity cannot be compassed.

Let us take another view of this argument. Self-existence may be considered in two lights, 1st, In respect to matter, and 2dly, In respect to form. The Atheist, as has been already remarked, admits, that there is no self-existence in respect to form. He allows, that no animal, no vegetable, no planet, no system, could have come into existence *per se*, but that they derived their formal being from pre-exist-

ing causes; and he contends, that this succession of forms, has extended backwards through the immeasurable ages of eternity. But he maintains, that the elements of matter are self-existent, and that the self-existence of matter is a sufficient foundation for an infinite succession of formal existents. If it be contended, that every one of the terms is dependent, and therefore the whole dependent, it is answered, as before, that an infinite series of equal magnitudes cannot be comprehended under a whole; and 2dly, That, what may be predicated of every individual term of such a series, may not be predicable of the series itself. Man, as an individual, is mortal; but there is no absurdity, it may be maintained, in supposing, that the race is immortal. Each generation, itself preceded by numberless other generations, produces, before it becomes extinct, another generation; and thus the species may be continued through eternity. Every term of the series is an effect, and therefore dependent on a preceding cause, and yet the series may not be caused. As from a present cause may arise an infini-

tude of effects *ad post*, so there may have been an infinity of causes *ab ante*, preceding the present effect. Each term must be an effect, but each term had for its cause an antecedent term.

"According", says Dr. Clarke, "to the supposition of an infinite succession of dependent beings, there is nothing in the universe necessary, or self-existing. And if so, it was originally equally possible, that from eternity there should nothing have existed. Then what determined the existence, rather than the non-existence of the universe? Nothing; which is absurd."

In examining this argument, two questions naturally present themselves. 1st, With what propriety does Dr. Clarke suppose any origin or beginning, when by the hypothesis of the adversary there was no beginning? The latter will not permit him to presume an origin; and he will ask, what he means, when he speaks of a thing, as "*originally* possible from eternity." Does not this notion involve a palpable contradiction? How is an origin reconcileable with eternity—that, which can

have neither beginning, nor end? If, in order to escape from this absurdity, it should be said, that the term origin is intended to refer to a period prior to the world's existence; the adversary will reply, that to assume, that there was a time, when the world, either in its chaotic, or digested form, did not exist, is to beg the question. The Atheist denies, that there ever was such a time, and maintains that, matter being self-existent, nothing was necessary to determine its existence.

The argument is instituted to prove, that a series of causes and effects infinite *ab ante* is impossible, and sets out with assuming, that the series had a beginning, or that there was a time, when it did not exist. This is surely a palpable instance of circular argument.

Such is the mode of reasoning, which some metaphysicians have adopted; and such are the answers, which their opponents might return. After long, and, I trust, impartial examination of this superlatively important question, it appears to me, that an infinite succession of causes and effects, how improbable soever may

be the hypothesis, cannot be metaphysically proved to be impossible. I am not acquainted with, nor can I conceive, any abstract principle, on which any reasoning can be instituted, to demonstrate the impossibility of such a series, without assuming directly, or by implication, the proposition to be proved. Though it may be true, that Dr. Clarke's argument might be stated in a form less liable to objection; yet, while the adversary admits every term to be an effect, but contends for a pre-existing term for its cause, asserting the eternity of matter, we in vain assail him by metaphysical argumentation. We may urge, that every term of the series must be produced, before it produces, that the character of the series therefore is, that of dependence, and this is the ground of the author's argument; but the intelligent reader must perceive, that the force of this reasoning may be easily evaded. For the Atheist grants, that every term is an effect, but reminds us, that it cannot be an effect, without having a cause. If we dismiss the term *effect*, as furnishing him with the means of eluding the argument, and

maintain the dependence of every term, he assents to this also, and acknowledges the dependence of each term on the term preceding. If we say, that the series has no cause, he admits it, and denies, that it can have a cause, matter being self-existent, and eternity having no beginning. Thus, while we cannot speak of any one term, as being dependent, without acknowledging the antecedence of the correlative term, on which, as a cause, it does depend, and cannot infer the dependence of the whole as effects, without involving the absurdity, that infinity is limited, the Atheist evades our reasoning*.

In the preceding examination of the abstract arguments, which have been adduced to disprove the eternity of the world, we have felt it our duty, as friendly to truth, and free discussion, to state such objections to their validity, as an adversary might offer. We must, at the same time,

* The argument for an eternal series of causes and effects, says Spinoza, is false, not because such a series is impossible, but because it is supposed, that things, which do not exist necessarily by their own nature, are not determined to exist by a thing necessarily existing. *Op. Posth.*

observe, that, though a few philosophers, may have their understandings so perverted by metaphysical subtleties, as to embrace the hypothesis in question, an infinite series of causes and effects is a notion so extravagant, so bewildering, and so unsatisfactory, that the mind feels an almost invincible repugnance against it. The argument of the Atheist may perplex and silence; but it is not calculated to satisfy, or convince. But, though we are not inclined to place our confidence in metaphysical reasoning on this subject, there is one argument, partly of this nature, which appears to us, to have very considerable weight, not to say, to be absolutely conclusive. It is offered by the Rev. Mr. John Bird Sumner*, in his Prize Treatise on "The Records of Creation." In order to disprove the eternity of the world, he reasons thus.

"If the universe itself is the first eternal Being, its existence is necessary, as metaphysicians speak; and it must be possessed of all those qualities, which are inseparable from necessary existence. Of this

* Now Dr. John Bird Sumner, Bishop of Chester.

nature, are immutability and perfection. For change is the attribute of imperfection; and imperfection is incompatible with that Being, which is, as the hypothesis affirms, independent, and therefore can have no possible source of imperfection. To suppose, therefore, of the first independent Being, that it could have existed otherwise than it is, is no less contrary to the idea of necessity, with which we set out, than to suppose it not to exist at all."

We acknowledge ourselves somewhat at a loss to understand the author's meaning, when he speaks of the "First Eternal Being." Can there, in the strict acceptation of the term, be a second or posterior eternal Existent? Must not every cause be anterior to its effect—every producer to the thing produced? Can one eternity *ab ante* be shorter than another? We are aware, as has been already observed, that, while some of the ancient philosophers maintained the necessary and independent existence of matter*, others, and with them some of the Christian fathers, believed it

* See "Ancient Metaphysics," vol. v. and vi., p. 209; also "Hutton's Investigation."

to be eternal by eternal generation, deriving its existence from the Great Author of all being; but that the world had a beginning. According to this hypothesis, though it is not reconcileable with the strictness of metaphysical truth, the notion of a First Eternal Being is intelligible. Considering the argument, as offered to prove, that the world cannot have existed from eternity, we may briefly state it thus. The world, if eternal, is necessarily existent; but what is necessarily existent, must be perfect; but mutability is incompatible with perfection; the world, therefore, which is mutable, cannot be the one perfect and self-existent Being. Now, it must be granted, that mutability is an evidence of imperfection; and as perfection, as being possible, must exist somewhere, the conclusion of the author seems necessarily to follow. Hence Spinoza, and all those of the same school, who maintain the universe to be Deity, have been compelled, for the sake of consistency, to affirm the world to be perfect. If the medium of proof, assumed by the author, be admitted, the inference is irresistible.

Plato believed matter to be eternal, and yet imperfect; and for this reason asserted the existence of an eternal Being of a higher order. Whatever is mutable, whether it can, or cannot, be supposed to exist by necessity, cannot be a perfect being. The argument, perhaps, might be considerably strengthened, by comprehending in it the brute character of matter, and may be shortly stated thus. The material universe, whether considered as a whole, or as composed of material atoms, is unintelligent; but what is unintelligent is imperfect—it is inferior to a being endowed with intelligence. An unintelligent being, therefore, cannot be the First of beings. The force of this argument it seems impossible to evade. Let us now proceed to the examination of facts, and we shall find, that they amply confirm this conclusion.

SECTION XI.

The eternity of the world irreconcilable with facts physical, and moral.

THE Atheist, who resolves the formation of our planet, and its various organisms, into necessity or chance, and he, who asserts the eternity of its existing constitution, with certain modifications of its living forms, concur, one with the other, in referring the existence of our globe to the eternal agency of mechanical causes*. The latter denies, that the vegetable and ani-

* Gravity is a term, expressing the phenomenon of mutual approximation of two bodies, without any visible cause. That an Omnipotent Being could invest matter with an attractive power, is a truth, which cannot be questioned. But, that matter can, by any mechanical principle of its own, act through a vacuum on other matter at an immense, or indeed at any, distance from it, is repugnant to all our experience of mechanical operation. Various hypotheses have accordingly been proposed, to account for gravity, and the planetary motions. We have Kepler's visionary projection of an immaterial image of the sun, drawing the planet towards him; we

mal worlds had a beginning, and affirms, that they will have no end. The assumption, on which both these hypotheses are founded, we have endeavoured to shew to be unphilosophical, and gratuitous. No mechanical causes are capable of accounting for the planetary system. But let us concede to the Atheist the agency of these causes; let us admit the hypothesis to be fact; the concession would powerfully militate against the eternity of our planet, as now constituted. For, whether we resort to the doctrine of Saussure, who attributed the planetary motions to the impulse of particles filling all space, or to the ethereal fluid of Newton, or to any material medium whatever, it is evident, that on

have the *vortices* of Des Cartes, and Huygens; we have these hypotheses modified by Bernoulli; and we have the ethereal fluid of Newton. This celebrated philosopher conjectured, in explanation of gravity, the pressure of an elastic fluid, increasing in density, with its distance from the sun, and "impelling bodies from the denser to the rarer parts of the medium, with all that power, which we call gravity." This is not only mere hypothesis, but is also incapable of explaining the phenomena. See "Vince's Observations on the hypotheses assumed to account for the cause of Gravitation."

every such hypothesis, the planetary motions must suffer a gradual retardation, and the destruction of the system inevitably follow. Whatever, then, must come to an end, must in all probability have had a beginning. But independently on this assumed ethereal fluid, or atomic medium, there are facts, which would lead us to infer, that this system of ours has its existence limited. La Place acknowledges, that light alone, were there no other retarding fluid, must, by means of its continual resistance, together with the gradual, but incessant diminution of the solar mass, whence this fluid is perpetually issuing, in time destroy the planetary arrangements, and render a total reformation necessary. " L'attraction mutuelle des corps de ce système ne peut pas en alterer la stabilité, comme Newton le suppose; mais n'y eut il dans l'espace celeste d'autre fluide, que la lumiere, sa resistance, et la diminution, que son emission produit, dans la masse du soleil, doivent à la longue, detruire l'arrangement des planetes; et pour le maintenir, une reforme deviendroit sans

doute necessaire."* Before we proceed, we cannot forbear from remarking, that the author appears to be inconsistent with himself, when he speaks of the necessity of a future reform in our system. In the mouth of a Theist, who believes in an Intelligent Being, acting for wise and benevolent purposes, the sentiment is natural, and its expression consistent with his principles; but how the observation is to be reconciled with the Atheist's exclusion of all final causes, we are quite at a loss to conceive. Does not the term *necessary* imply an end to be accomplished; and does not an end imply the application of means? Can an end be contemplated by any, but a provident and intelligent being? But let us dismiss this inconsistency. No mechanical causes, as far as experience teaches us, can produce perpetual motion. Friction and resistance present insuperable obstacles. If La Place's anticipation of the future destruction of the planetary worlds be founded in just physical principles, or if indeed it be admitted, as it

* *Système du Monde*, lib. v. chap. 6.

seems hardly to be denied, that any fluid either quiescent, or passing between the sun and planets, must retard the projectile motion, it is clear, that this system of ours must come to a termination, and hence it necessarily must have had a beginning, For, as a system which has been from eternity, must in its essence and construction be eternal, or everlasting, so a system, which must come to an end, must have had a commencement. If there be causes now in operation, which must ultimately derange our globe, its vegetable and animal beings must have had an origin.

It may be further observed, that independently on the effect, which a resisting fluid, and the diminution of the solar mass, must necessarily produce on the planetary motions, there are not wanting one or two phenomena, which would lead us to believe, that the whole solar system is gradually stealing forward to a final termination *. Our general argument, then, may

* Recent observations render it highly probable, if not morally certain, that the whole solar system is gradually moving towards the constellation *Hercules*. It would appear also, that the moon's orbit has been decreasing, and that she is gradually approaching nearer to the earth,

be stated thus. Either mechanical causes cannot account for the production of the system, whence it follows, that it had an Intelligent Author; or if it be moved by mechanical causes, it must come to an end, and must have had a beginning. The Atheist must either adopt the latter conclusion, or maintain the absurd position, that a system, eternal *ab ante*, is notwithstanding perishable.

2dly, If the world has existed from eternity, the question naturally presents itself, how is this eternity of being reconcileable with the moral and intellectual condition of the human species? Why is a large portion of them still found in a state of barbarism? Why have not arts and sciences arrived at a higher degree of perfection? Why are some still in a state of infancy? How is this fact to be reconciled with the hypothesis of the Atheist?

To these questions it has been answered, that, though the improvement of man, as an individual, is limited, his advancement,

to which, in the absence of a controlling power, she must ultimately come. This acceleration of the lunar motion La Place ascribes to a small diminution in the eccentricity of the earth's orbit.

as a species, in art and science, is boundless. The Sceptic also assumes, that the field before us is of infinite extent, and that one discovery or invention necessarily leads to another, thus progressing in endless succession. Perfection, he observes, can mean nothing, but that state, in which every art and science has attained the summit of improvement, and when nothing, either in theory or in practice, remains to be accomplished. But, if it is impossible to fix, or even to conceive, a limit to human improvement, and the progress of discovery, it follows, that this perfection is unattainable; that the discoveries and inventions of thousands of centuries will only open the way to further advancement; and that no period can be named, or even imagined, when art and science shall cease to progress. When it is asked, therefore, why are not arts and sciences farther advanced, is not this, it may be said, a question, which may be proposed with equal propriety, myriads of ages hence? When the world shall have existed for ten thousands of years, will there not still remain an infinite field for the in-

genuity of man to explore? If so, may it not with equal pertinency be asked *then*, Why has not man made greater progress in the cultivation of art and science? In short, the Sceptic contends, that there can be no future period, how indefinite soever may be its distance, at which the same question may not be proposed, and that this query cannot therefore affect the truth of his hypothesis.

This answer to the objection carries with it the semblance of validity; confidently, however, as it has been urged, it will be found on examination to be irrelevant, and unsatisfactory. Be it granted, that no limit can be assigned to human knowledge, and that the possible improvement of man, as a species, is interminable, does it hence follow, that it had no beginning? The question here is not, whether the cultivation of art and science is to have an end, but whether it had a commencement. Now, it is evident, that every invention must have had an author, and therefore a beginning. All inventions, therefore, taken collectively, must have had an origin. It will not be permitted to

the Atheist to assert here, in respect to a series of inventions, what he affirms in relation to an infinite series of causes and effects, all of equal magnitude, namely, that they cannot be comprehended under one whole. Here we retrograde from a limited number of inventions by a continually decreasing series, capable of being comprised in one sum.

The force, therefore, of this argument is not to be evaded by the hypothesis of an eternal series of inventions, or by the assertion, that man has been from eternity, and that discovery and invention were coeval with his existence. An infinite series is the favourite dogma of the Atheist. If not calculated to convince, it serves to perplex and confound. Here it will not avail him. The farther we go back, the nearer we approach to a limit, until at last the series is exhausted. The time, therefore, was, when inventions and discoveries began to exist: man, therefore, had a beginning: for to suppose, that, even in his lowest state of intellect, he could have existed an eternity of ages, antecedent to any discovery or invention, would be irrecon-

cileable with his character, as a percipient, intelligent, and inquisitive being. Nay, if this supposition were admitted as possible, the origin of any invention would almost amount to an impossibility. If the human species, then, had a beginning, what becomes of the Atheist's hypothesis of an eternal series of generations? It falls to the ground. And if man had an origin, it is a physical impossibility, as has been already shown, that he could be the production of any fortuitous concourse of atoms. His existence, therefore, must be ascribed to a Superior Power. And, if this was his origin, we are warranted in concluding, that it was that also of every other organized being.

The force of this argument, we conceive, it is impossible not to feel, and equally impossible to elude. This insuperable difficulty the Atheist attempts to conquer, by resorting to the hypothesis of occasional deluges, and other tremendous convulsions of nature, which may, frequently, with the destruction of the greater part of the human race, have swept away all knowledge of antecedent discoveries.

In order to render this a satisfactory solution of the question, it is necessary to suppose, that the remnants of mankind, successively saved from these several catastrophes, were left ignorant of the discoveries and inventions of their own and preceding ages. For, if they were acquainted with these, they must have transmitted, if not the whole, at least the greater part to the succeeding generations. Thus every subsequent convulsion, though it might bury much of that knowledge, which had been previously acquired, would still have left the survivors possessed of a larger stock of discoveries and inventions, than had been preserved after the preceding catastrophe. Thus knowledge, how slowly soever, would continue to increase; and when it is considered, that the progress would be from eternity, these occasional retrogradations in art and science vanish as nothing.

It may be objected, we are aware, that we beg the question, when we assume, that every succeeding period commenced with greater improvement, than the one which preceded it. An opponent may contend,

that possibly so few may have escaped from these desolating alternations, and these few left in circumstances so adverse to the communication of former discoveries, and the cultivation of art or science, that almost all antecedent knowledge was entirely lost.

It is answered, If any convulsion, a deluge for example, could sweep away so large a portion of the human race, leaving so few behind, and these few in circumstances so calamitous, that all art and science perished with them, it is possible, that a flood, or some catastrophe, might have happened, which would have destroyed the whole species. But, if such a convulsion be possible, it must actually have taken place; for whatever is possible, in other words, every possible concurrence of circumstances, where the sphere is limited, must take place in the revolutions of eternity. This indeed is a favourite dogma of the Sceptic. If the earth then, or rather its inhabitants, had existed from eternity, one or other of these convulsions must ere now have extirpated the human race. And, if man, with the whole animal and

vegetable creation, were, by one of these catastrophes, now to be annihilated, and the various sperms or seeds, whether in earth, air, or water, to be decomposed, he would be a bold speculatist, who would affirm, and he credulous to idiotism, who would believe, that accident, or any unguided agency, would ever regenerate, or reproduce them.

Again.—If these successive retrogradations and progressions of art and science had ever taken place, it is evident that some vestiges would have been left, to record the facts. There are many arts now in existence, the traces of which seem almost imperishable. If, in successive convulsions of nature, land and water had alternately changed places, is it not surprising, that, frequent as these convulsions must by the hypothesis have been, no monument of art, beyond human record, has ever yet been discovered,—no monument, which we cannot refer to the nation, in which it originated. This surely seems quite irreconcileable with the eternal existence of man. If such repeated convulsions, as the Atheist affirms, should, in the revolutions

of time, hereafter occur, the presumption is strong, nay, amounting to a certainty, that future ages would find some relic of human art,—as, for example, engraving or sculpture,—to attest its previous existence. The absence of all such monuments of antiquity, beyond a very limited period, furnishes a powerful, we may even assert, irrefragable evidence, that art and science have not, and therefore man has not, eternally existed on this globe.

This argument then, if there were no other, is unanswerable and conclusive. For the Atheist must either shew, that there could be no first invention, no first discovery; or he must renounce his series, and believe, that man had an origin. But no simple act of invention is susceptible of measurement or division, and a decreasing series, running through eternity, of indivisible terms, is an absurdity. And, if man had a beginning, the adversary cannot contend, that he was formed by chance; for it is from a conviction of the impossibility of such formation, that he adopts the hypothesis, that our system, as now constituted, has been from eternity.

We proceed to state another argument, which has been offered to shew, that not only has man not existed from eternity, but that, of all animal beings on this earth, he must have been the last, to whom existence was imparted. In exploring the outer shell or surface of the globe, for it is but a little way below its surface that we can penetrate, we find, on digging downward, our researches stopped by primordial rocks, composed of solid granite, or gneiss. These have been supposed to constitute the original shell or crust of the earth, before it became a habitable world; and in these, it has been generally believed, that no vestige of any organic substance has ever been found. This opinion, however, is considered to be somewhat questionable; for a species of coal has been discovered among those primitive rocks; and coal is known to be a substance of vegetable origin. It might be hence inferred, that plants were the first of organic beings, that existed on the present continents. It would seem, accordingly, that some geologists have conceived, that facts justify them in maintaining, that vegetables were first produced,

and that these are followed by a regular progression of animal beings, from more imperfect to more perfect forms, in successive strata, up to man. Vegetables being supposed to form the first; in the second stratum, it is said, are found zoophytes and shell-fish; in the third stratum, vertebrated animals; in the fourth, quadrupeds; and in the fifth, the stratum of alluvial soil, and in this only, are found any relics of the human species. The correctness of this statement may, in some of its particulars, perhaps, be disputed; but it is a fact, that in the lower strata, where the relics of quadrupeds and inferior animals are found, no human remains are discoverable; and that the latter appear no where, but in the uppermost part of the strata of alluvial earth. Hence Cuvier maintains the great probability, while other eminent geologists affirm, as the phenomena indicate, the absolute certainty, that of all organic beings man was the last in the order of creation, and has therefore not existed from eternity*.

* There is a singular and striking correspondence between these facts, and the Mosaic account of the creation

It is urged, as an objection to this conclusion, that, unless relics of every existing animal were found in the alluvial soils, we have no reason for concluding it as certain, that the origin of man was of the most recent date. But, when it is considered, that the remains of all the larger

of the world, in respect to the periods of time, in which organized beings were formed. Moses writes, that "in six days God created the heavens and the earth." *A day* is often employed to denote an indefinite period. There seem to have been six distinct acts of Creative Power. 1st. The formation of the earth. 2d. Of vegetables. 3d. Of zoophytes and shell-fish. 4th. Of vertebrated animals. 5th. Of quadrupeds; and 6th. Of man. Whether it was in six days, strictly so understood, that God "created the heavens and the earth," or in six indefinite spaces of time, is a question at which the rational and devout Theist has no occasion to startle. "God said, *Let there be light, and there was light.*" The same Omnipotent voice could have called the whole universe into instantaneous existence. But, as far as we can penetrate into the counsels of Eternal Wisdom, it seems to be ordained, that the operations of nature shall proceed by degrees. This is a truth, which almost every phenomenon around us serves to confirm. And, whether the interval was a day, or a thousand centuries, the difference vanishes in the eye of Him, "who is from everlasting to everlasting." The Persians believe, that there were six distinct acts of Creative Power, at intervals of 1000 years each.

quadrupeds, the elephant, the horse, the ox, the rhinoceros, the bear, the stag, with many other *genera*, some now existing, and some extinct, are found embedded in alluvial soils, it furnishes a very strong presumption, that, if man had been coeval with them, some relics of him must have been discovered interspersed with theirs. The presumption indeed amounts to a moral certainty *.

It is urged also, that the non-existence of human relics in the primitive rocks, furnishes no conclusive evidence that man

* Cuvier, after admitting, that every circumstance contributes to establish this position, that the human race did not exist in the countries, in which the fossil bones of animals have been discovered at the epoch, when these bones were covered up, as no reason can be assigned, why men should have entirely escaped from such general catastrophes, adds, that he does not presume decidedly to conclude, that man did not exist before these epochs, for that he might then have inhabited some narrow region, whence afterwards he issued, to repeople the earth. Such a circumstance is hardly within the range of physical possibility; for, if we consider, that thousands of years probably intervened between one convulsion and another, and that mankind multiply in a higher ratio, than the larger quadrupeds, it is not credible, that the former should all exist in one narrow spot, while the latter were spread over the greater part of the earth.

and other animals were not contemporaneous with them; for that these animals might have been destroyed by the extreme heat, to which they might have been exposed *. But, while it remains a matter of doubt, whether the primitive rocks of granite or gneiss were of igneous origin, or formed by deposition, and crystallization, the objection, implying a mere possibility, is of little weight. Let it, however, be granted, as the more probable hypothesis, that these rocks were produced by extreme heat, and that organic bodies, previously existing, were thereby destroyed, and their forms annihilated in the common mass, it might naturally be expected, that they would still be discoverable by chemical analysis in these primordial rocks; but not a trace of them have we been able to find.

In Sir H. Davy's six discourses, delivered before the Royal Society, the absence of all relics of organized beings, at the lowest depths, to which we have yet penetrated, is asserted as an acknowledged fact. "It has been ascertained," he says,

* Brewster's Encyclopædia. Art. "Organic Remains."

"by the examination of a great extent of surface, that the rocks, which rise to the greatest elevation in the atmosphere, and those found at the lowest depths, to which human industry has as yet penetrated, are composed wholly of crystalline matter, containing no remains of organised beings, or any former order of things; upon those rocks, at common heights or depths, are found others, principally constituted of crystalline matter, and affording some few remains of shells, fishes, and plants. To these succeed a number of *strata* or layers, less consolidated, affording much smaller proportions of crystals, abounding in fragments of the older rocks, and containing, embedded in them, the remains of plants, shells, fishes, oviparous reptiles, amphibia, and birds, each stratum being characterized by the peculiarity of its organised remains. Upon these consolidated and extensive strata are found others, which, where not produced by deposition of *gypsum*, in what may be called fresh water formations, consist of clay, sand, gravel, or water worn stones, and in these are discovered, among a vast number of other de-

posits, the remains of viviparous quadrupeds. In the lowest strata, it has been observed, and I have found by experiments, that these organised remains contain none of their original bony matter; but in proportion as the formations or depositions may be supposed to be more recent, so, in proportion, is more of the original matter of the bone or shell found in them."

Again.—If this extreme temperature affected the whole of the inclosing shell or stratum, and thus destroyed every organic substance, it is impossible, by any known chemical or mechanical law, to account for their reproduction. If it did not affect the whole, but only a part, and if some individuals of the then existing species, some quadrupeds for example, escaped, and multiplied, can any admissible reason be assigned, why some of the human species, probably more numerous, did not escape also, and their relics be found intermingled with theirs? If the extreme temperature, then, affected the whole shell, and destroyed every organic being, their reproduction seems physically impossible; and if it was not universal, some relics of the human

species must be discoverable on this bed of granite.

It is true, as it has been also objected, that, if sea and land were to be exchanged, and the rocky bed of the ocean to form a new continent, marine relics would predominate; and it is urged, that future geologists, not finding any relics of terrestrial animals, might fallaciously be led to infer, that such animals never existed in those regions, which now abound in them. Hence it is argued, that to infer from the absence of human relics in the lowermost strata, or from every place but the high alluvial soil, their non-existence at the most ancient dates, may be equally false. In answer, it may be observed, 1st, if such an interchange should be gradual, this false conclusion could not be drawn; if rapid or instantaneous, as Cuvier supposes the revolutions to have been, we are at a loss to know, where these future geologists would be found. They would perish, we apprehend, in the general wreck; or, if they did not, there would remain in *them*, and probably in some *other species* also, living examples of terrestrial inhabitants. Let it

be observed, 2dly, that the objector assumes too much, when he takes it for granted, that no relics of land animals would be discovered; for in the thousands of years, which it is supposed would elapse between one convulsion and another, vast numbers of land animals would be carried into the sea, some of whose relics would probably be found, and reveal their previous existence. But, 3dly, let it be granted, that on the supposed interchange of sea and land, no vestige of a terrestrial animal were discovered, and that the conclusion, that such had never existed would be erroneous, still it must be allowed, that there would be a rational and sufficient ground for drawing this conclusion. Metaphysical certainty in such cases is not attainable; and moral certainty constitutes a just ground of belief. But, if in the circumstances supposed, the relics not only of all the terrestrial animals then existing were found, but those also of many species then extinct, while none of man were discoverable, and this is the analogous hypothesis, future geologists, if such without a contradiction could be supposed to exist after

this catastrophe, would be justified in concluding, that the human species had not existed antecedently to the convulsion. If then we find the relics of zoophytes and shell-fish in the lowest stratum of animal life, vertebrated animals in the next, and quadrupeds in a superior stratum, but still no relic of man; we have reason to conclude, as a truth morally certain, that man was a more recent production; nor would a solitary deviation, which might arise from extraordinary causes, invalidate the conclusion. Analogy, too, strengthens the inference. Gradation seems to be a law of universal nature. The phenomena of the universe, with few exceptions, proceed by degrees. Every thing seems progressive to a certain point. Individuals of every species advance gradually to maturity: analogy then would lead us to conclude, that there has been a similar progression from one species to another.

It seems indeed utterly incredible, that man, or any other terrestrial animal, could have existed from eternity on this globe. For, whether we suppose its surface to have been once in a fluid state, as its spheroidal

figure indicates to be highly probable, if not absolutely certain, or suppose, that the crust or shell was formed by fusion, occasioned by excessive heat, it seems equally impossible, on either hypothesis, for man, or any other terrestrial animal, to have existed in either of these two states of the globe. We must conclude, therefore, that they had an origin.

Again.—The hypothesis that the vegetable and animal organisms, existing on our globe, had no beginning, is wholly irreconcileable with that intelligence and design, which are visible in their structures, in their various modes of propagation, and the provisions made for their support. If it can be shewn that the economy of nature manifests wisdom and contrivance, of which several proofs have been already exhibited, and more will be adduced, it follows, as a necessary consequence, that vegetables and animals have not existed from eternity, but must have had a beginning.

We reject then the hypothesis, which maintains the eternity of this system, and for these reasons:—1st, It is irreconcile-

able with the state of art and science, as having progressed from eternity; and in tracing inventions backward in a decreasing series, we must necessarily arrive at a period, when invention had a beginning; nor can this insuperable objection to the hypothesis be removed by the various convulsions, which our planet may have suffered. 2d, No relics of human art are found, which we cannot refer to a period, within the range of historical record. 3d, The non-existence of human relics, except in the uppermost strata, and their superincumbency to the remains of inferior animals, indicate a time, when man did not exist. 4th, The hypothesis is repugnant to those manifestations of design, which are visible in the whole economy of nature. 5thly, If the whole earth was once either wholly, or superficially, in a state of fluidity, as its oblate form would indicate, no land animal could have had then any existence *.

* It is matter of curious speculation, what composes the central parts of our globe. From the temperature, which is found at a depth, to which caloric from the sun's rays cannot penetrate, it has been imagined, that fire is

It has been shewn, that no fortuitous concourse of atoms can account for the formation of this globe, and the mutual aptitude of its constitution and that of the organised beings, sustained by its productions. It has been shewn, that we have no evidence to prove, that the elements of matter possess any active and essentially inherent powers, and that no chemical or mechanical properties, admitting them to have an independent and underived existence, could account for the origin of the human species, or of any other organised form. It has been proved that arts and sciences must have had a beginning, though in their progress they may be interminable, and that man therefore must have had a beginning. It has been shewn, by an appeal to acknowledged geological facts, that there must have been a time, when organ-

at the centre. The average density of the earth, as estimated by experiment and calculation, seems opposed to this hypothesis. Others, with more probability, have believed, that the centre is composed of a mass of liquid burning matter; and others, that its central parts consist of solid granite. One thing is clear, that the crust or shell is composed of this substance, in which no vestige of an animal form has yet been discovered.

ised forms began to exist on this globe, and that man must have been the last of animated beings to whom existence was imparted. Neither man therefore, nor any other organism has been from eternity. Every species must have had a beginning.

SECTION XII.

A summary of Spinoza's opinions as exhibited in his "Opera Posthuma."

We proceed now to direct our attention for a little to another hypothesis. By what name it is to be distinguished—whether it is to be called Atheism or Pantheism,—it is unimportant to determine. The hypothesis to which we allude is that of Spinoza. To examine the whole of it in detail would occupy more space, than its character deserves, or would be consistent with our limits. Our attention must be confined to a few of his leading axioms, and propositions. And, as these involve much metaphysical subtlety, and require more than ordinary abstraction of thought, rendering

the examination of them tiresome to some, and to others perhaps unintelligible, we have deemed it advisable to give here only a general outline of his system, referring the metaphysical reader, for more particular information, to a note subjoined at the end of the volume. Nothing indeed should have induced us to notice the dogmas of this insidious sophist, but the persuasion, that not only on the continent has this system still many adherents, but is in this country also advocated by a few, who either see not, or profess not to see, the baleful tendency of the doctrines, which Spinoza inculcated.

The system of Spinoza has been variously understood, his advocates denying that it contains any doctrine irreconcileable with Theism, or derogatory to the character of the Supreme Being; and his opponents representing his *Opera Posthuma*, as inculcating, under disguise, the pestiferous principles of a thorough paced Atheist. It is remote from our intention to exaggerate his errors, or to impute to him doctrines, which he has not clearly expressed, or which are not legitimately deducible from

the principles, which he maintains. But a respect for truth compels us to acknowledge, that, after an attentive examination of his posthumous work, it appears evident to us that, while his argument professedly aims at the demonstration of an infinite Being, and while he speaks of Deity in terms of reverential respect, his doctrine would utterly annihilate our faith in the existence of an Intelligent Creator and Ruler of the universe. His hypothesis is pregnant with the most revolting extravagancies, and leads to conclusions, at which the heart sickens with disgust, and the soul recoils with horror. The dogmas inculcated by this insidious sophist seem to have originated with Xenophanes, and were subsequently adopted by Parmenides and some other philosophers of Greece*.

* "Xenophanes, paulo etiam antiquior, unum esse omnia, neque id esse mutabile, et id esse verum Deum, neque natum usquam quicquam, et sempiternum conglobata figura." *Cic. Acad. Quæst.* lib. ii. See also *Aristot. Met.* lib. i. cap. v. Authorities, so strong as these, and which have been generally followed, we should feel it unpardonable presumption to oppose. In justice, however, to the two Greek philosophers, we deem it a duty to observe, that Simplicius has offered arguments of con-

Spinoza was persuaded, that something must have existed from eternity; but perceiving nothing in the world but matter, concluded, that nothing but matter can exist. He asserted, therefore, that there is but one substance, and this substance, with its attributes and modes, infinite and self-existent. The following summary we believe to contain a correct exhibition of his leading principles; how far the judgement, which we shall here pronounce on their character is just, the reader, by referring to the note, will be enabled to decide for himself. To us it is evident that he justly incurs the charge alleged against Epicurus and the disciples of the same school, "Deum verbis ponere, re tollere." The whole of his doctrine is founded on certain definitions and assumptions, of which some are false, and others gratuitous. He introduces his system with a definition, which, if not involving a contradiction, is at least chargeable with extreme inaccuracy.

siderable weight, to shew, that they believed in one Eternal Intelligent Principle, superior to matter, and in its nature more simple. See *Cudworth's Intellectual System*, i. 4.

He represents a self-existent being, as the cause of his own existence. He assumes that we can conceive a substance to be divested of its modes. This is false. He assumes, that our knowledge of the effect depends on our knowledge of the cause. This also is false. He assumes, that no being can comprehend another, unless they have one common property. The assumption is gratuitous; presuming, that nothing is possible, which is not exemplified by experience. With equal truth might we assume, that man is at the head of all intellectual being. He presumes, with no sufficient evidence, and in opposition to powerful argument, that the thinking principle in man is purely material. He would prove, that only one substance exists, and yet reasons as if there were a plurality of substances. He would prove, that one substance cannot produce another, the basis of which proof is gratuitous assumption. He maintains, that there is only substance, and this substance infinite. And as there can be only one infinite substance, it must be either the universe without Deity, or the Deity without the universe,

or, as he admits, both, it follows that the Deity and the universe are one and the same substance. He believes the Deity, or the universe, to be one extended, infinite and indivisible being; and yet he maintains, that bodies and minds are parts of Deity*, involving the absurdity, that what is composed of parts is notwithstanding indivisible; nor will the subtle distinction, which he offers between the Deity, as infinite, and the Deity, as unfolded in the nature of the human mind, remove the contradiction. He must believe, in consistency with his doctrine, that the universe is one continuous being; and therefore he is obliged to deny, that a *vacuum* is possible. He attributes wisdom to the infinite substance, and yet denies final causes; in other words, he admits the existence of perfect intelligence to contrive, and ab-

* "Nam Pythagoras, qui censuit animum esse per naturam rerum omnium intentum et commeantem, ex quo nostri animi carperentur, non vidit distractione humanorum animorum discerpi et dilacerari Deum; et cum miseri essent animi, quod plerisque contingeret, tum Dei partem esse miseram; quod fieri non potest. Cur autem quicquam ignoraret animus, si esset Deus?" *Cic. de Nat. Deor.* lib. i.

surdly denies a purpose, or an end. He maintains, that substance is conceivable by itself, and yet that extension is necessary to our conception of its nature. According to his doctrine *substantia est in se.* If by this were meant, that substance exists in itself,—having no cause, then it is self-existent; and his proposition to prove, that existence essentially belongs to it, is a work of supererogation. If it is merely signified, that substance exists independently on its modes, we ask, in what respect it differs from body. The latter he defines to be a mode, expressing the essence of Deity, as far as he is considered to be an extended Being. But has not body the attribute of extension? If not, how does he acquire his notion of extension? And if body be extended, is it not according to his own doctrine, conceivable by itself? The same process of reasoning would demonstrate body to be self-existent, infinite and indivisible, by which he proves substance to be possessed of these attributes. He contends, that there can be only one substance, and yet acknowledges the existence of corporeal substances.

Such are the falsities, the contradictions, and gratuitous assumptions in the system of Spinoza, a system too abstruse in its principles, to be generally understood, and in its consequences too abhorrent to our natural feelings, to be generally embraced.

In the preceding pages, it has been our endeavour to show, that the universe could not have been formed by chance, or be the result of a blind necessity. It has been proved also, that this planet of ours, with its organized beings, has not existed from eternity. We have had occasion likewise to examine some of the various hypotheses, by which the Atheist would account for the production of plants and animals on this globe, and we have found them to consist of extravagant conjectures, and the most incredible suppositions, irreconcileable with known facts, and all physical possibility, as the laws of nature are now constituted.

We should now proceed to state the grounds, on which the existence of a Supreme Being is established. But, before we institute an enquiry into the truth of any proposition, it is indispensably requi-

site, that we should clearly understand, of what evidence the subject is capable, and what reasoning the question admits. Without due attention to this preliminary enquiry, we may reject truth, and embrace falsehood. We may doubt, where we ought to believe; or believe, where we ought to doubt. It is our purpose, therefore, to offer a few observations on the nature of evidence generally, and apply them specially to the subject of discussion.

SECTION XIII.

The nature of Evidence, and its several kinds stated, and explained.

EVERY proposition must be considered as proved, and entitled to our assent, when its truth is confirmed by reasoning, founded in that evidence, of which the subject is susceptible. We should not deny, or question, that such a man, as Julius Cæsar once lived, in opposition to the concurrent testimony of numerous historians, because the fact cannot be proved, with the same certainty, as that the angles at the base of an

isosceles triangle must be equal. Nor should we, on the other hand, admit, that the latter proposition is true, because every appeal to experiment has proved the equality, or because all mathematicians have concurred in asserting it. This is an abstract and necessary relation, which no experience can demonstrate.

Evidence has been divided into two species, intuitive and deductive. Some truths command our pure and perfect assent, as soon as they are enounced, and the terms understood; as, "The halves of equals are equal." "Every effect must have a cause." "All men are mortal." "Heavy bodies fall." These are propositions, the truth of which we perceive immediately, and we are said to learn them by intuition. Truths, founded in deductive evidence, are those, which are not immediately apprehended as such, or to which we assent, as soon as they are proposed, but which are evolved or deduced, through the medium of other truths. Thus, "Industry increases wealth; wealth is beneficial to a state; therefore industry is beneficial to a state."

Some intuitive truths are immutably and necessarily certain. To disbelieve, or even to doubt, them is impossible. Propositions expressing them not only are, but must be true. "The whole is greater than a part"; "Every substance has properties", are truths, which it would argue idiotism or perversity to deny. There are others, which, though they are not supported by the same invincible evidence with these, and though their contraries imply no contradiction or absurdity, command notwithstanding our immediate belief. "There are beings in the world beside myself"; "The sun rose this morning"; "Heavy bodies descend to the earth", are propositions, to which we yield an instantaneous and implicit assent—and which exert an irresistible influence over our sentiments, and conduct. Hence evidence has been divided into certain and probable; the former being confined to those truths, the contrary of which involve a contradiction, and the latter to those, which, with greater or less cogency, command our belief. The former may be termed metaphysical, and the latter moral evidence. The subjects of

the one are the abstract relations of our notions or ideas; and of the other, matters of fact, as objects of knowledge. The principal distinction between these two sorts of evidence, consists in this, that propositions resting on the former must be true: their contraries would not be merely false, but absurd; propositions, founded on the latter, may possibly be false. The highest evidence then, of which any truth is susceptible, is metaphysical, or that, which refers to the immutable and necessary relations of our abstract notions. Metaphysical axioms are no sooner understood, than they command our assent; nor can any reasoning strengthen our conviction of their absolute certainty. On such as refer to the relations of number and quantity, or rather to our notions of these, together with definitions of the terms employed, the reasoning of the mathematician is founded; and this species of argument has been distinguished by the name of demonstration.

Metaphysical evidence, then, being entirely confined to abstract relations, is obviously inapplicable to every question of real existence—every question involving a

subject external to ourselves. Fruitless, therefore, must be every attempt to demonstrate the existence of Deity as a necessary truth, or to shew, as has been affirmed, that it is as impossible for him not to exist, as for two and two not to be four*. Nor is it, perhaps, too much to assert, that metaphysical arguments in favour of Theism, notwithstanding the high authorities from which they have proceeded, and the confidence, with which they have been urged, have generally failed to produce conviction, and on strict examination will be found to be inconclusive. It is justly observed by the late Professor Hutchison, that "they are not adapted to the bulk of the capacities of mankind, and can afford no solid or permanent conviction to the learned themselves." Every attempt to prove the existence of Deity to be a necessary truth must be unsuccessful, and a doctrine so momentous should not be submitted to reasoning, too obscure to be generally intelligible, or too questionable to be satisfactory. Nothing proves so in-

* Clarke on "The Being and Attributes of God."

jurious to truth, as the adduction of arguments, in its support, which are either inapplicable to the question, or which the adversary may retort, or metaphysical subtlety elude.

The learned and sagacious Dr. Clarke, though he resorted to metaphysical reasoning, to demonstrate the existence of Deity, seems to have been fully aware, that this species of argumentation is much less calculated to produce conviction, than that, which is derived from the phenomena of nature. This is sufficiently manifest from a conversation, which passed between him and Mr. Whiston, on the subject of his celebrated work on the Being and Attributes of God. "I was", says Whiston, "in my garden, against St. Peter's College, Cambridge, where I then lived. Now I perceived, that in these sermons, he had dealt a great deal in abstract and metaphysical reasoning. I therefore asked him, how he ventured into such subtleties, which I never durst meddle with; and shewing him a nettle, or some contemptible weed in my garden, I told him, that weed contained better arguments for the

being and attributes of God, than all his metaphysics. Clarke confessed it to be so; but alleged for himself, that since such philosophers as Hobbes and Spinoza had made use of those kinds of subtleties *against*, he thought it proper to shew, that the like way of reasoning might be made better use of *on the side of* religion; which reason or excuse I allowed to be not inconsiderable."*

Such was the motive, it would appear, which induced Dr. Clarke to resort to the employment of abstract arguments, in order to overthrow the reasoning of these subtle metaphysicians, and to establish the doctrine of Theism. While we acknowledge the necessity of meeting an adversary on his own ground, we must at the same time remark, that it is one thing to expose his fallacies, and quite another thing to attempt the establishment of the doctrine, which he impugns, by arguments equally inapposite as his own. It would have been quite sufficient, and less dangerous, if Dr. Clarke had rested satisfied with disproving

* Whiston's Memoirs.

the abstract dogmas of Spinoza. This we have attempted, and we hope to the satisfaction of the metaphysical reader, who may deem our examination of Spinoza's reasoning worthy of his attention.

If abstract argumentation then be, in its very nature, inapplicable to questions of fact, it must be equally impossible to prove, as to disprove, the existence of Deity by this species of evidence. It has been seen with what doubtful success Dr. Clarke has employed it against Spinoza and Hobbes; and we shall prove, that the former of these two has completely failed to establish his doctrine, by whatever name it may be called, whether Atheism or Pantheism, when he attempts to support it by Metaphysical demonstration. But, though the existence of an Intelligent First Cause cannot, from the very nature of the subject, be evinced with the same certainty as a mathematical truth, or its contrary be proved to involve a metaphysical contradiction, it will be found on examination to rest on evidence so clear and conclusive, as to compel the assent of every candid enquirer, whose understanding has not

been entangled in metaphysical subtleties, and whose reason is not inaccessible to the authority of that evidence, of which alone the question is susceptible. It is quite as ridiculous for a man to refuse his assent to a fact, because it cannot be demonstrated by scientific reasoning, or is incapable of mathematical proof, as to deny sound, because it cannot be seen, or smell, because it cannot be touched. It is on moral evidence, on which the question rests, the sources of which we shall now briefly explain.

SECTION XIV.

The sources of Moral Evidence.

THE subjects of Moral Evidence are questions of fact, or of actual existence. The propositions, within its scope, are accordingly such, as are not immutably, and necessarily true. The first source of moral evidence, that claims our attention, is consciousness. "I exist," "I perceive," "I feel," "I remember," are facts, which no

rational being can question for a moment. We can no more doubt their certainty, than we can question the truth of a mathematical axiom. Our very assent indeed to the axiom itself necessarily implies our existence, as thinking beings. But, as the testimony of consciousness is entirely confined to what passes within ourselves, no argument can be drawn from this source, applicable to the proof of any external existence.

The next source of moral evidence, which claims our attention, the subjects of which are likewise propositions intuitively true, is external sense. I am not only conscious that my organs of sense are affected in various ways—that I see, that I hear, that I taste, and have a firm conviction of these perceptions; but I believe also, that there exists something external, as the cause of these affections. They cannot be self-created. What that external something is essentially, by which my sensorial organs are affected, I know not: its existence is to me entirely relative; it is known only, as perceived. We may perplex ourselves with certain metaphysical subtleties,

respecting substance generally, and matter especially; but that there exists something, at the present moment, external to myself, which affects my senses of sight and touch, is a fact, of which no sophistry could destroy my conviction. Some Theists may doubt, whether the impression on the organ of sense be effected through the medium of a substance really existing, or by the immediate agency of the Deity. With the Atheist however this can be no question, matter with him being the only existing substance. It can hardly be necessary to observe, that this evidence is not applicable to the existence of Deity. The Author of Nature is not an object of sense, any more than the mental operations, by which we apprehend his being, and attributes. Nor can it extend to possible existence; from what we perceive to be, we cannot conclude, what cannot be.

Next in order to the evidence of sense, is that, which is derived from the faculty of memory. As sense and consciousness inform us of facts or feelings, immediately present, so memory records them after they are past; and, as we believe, what we see,

or feel, so we believe, what we distinctly remember. If it be asked, why? we can only answer, that such is the law of our nature.

As the existence of a Supreme First Cause does not admit either the evidence of external sense, or of consciousness directly, though the information, derived from both, is necessary to our conclusion, it follows, that the evidence of memory must, from the nature of its office, be inapplicable to the question.

The reports of memory, considered in the aggregate, constitute, what is termed personal experience. From this source partly are derived those important truths, which direct our conduct in the business of common life, and form the basis of physical, and moral, science. But the experience of man, as an individual, is limited, and narrow. It is by the accumulated observations of the species, transmitted from age to age, that human knowledge advances to perfection. Testimony, therefore, forms another important evidence, though not, like that of consciousness, sense, or memory, of an intuitive nature.

Man, when free from the influence of sinister motives, or ungenerous feelings, naturally speaks the truth. Children, accordingly, are universally credulous; nor is distrust or incredulity excited, until an acquaintance with mankind has taught them, that truth and honour are sometimes sacrificed to selfish interests, and sordid passions. But the testimony of a witness, of approved integrity, and discriminating judgement, attesting a fact, coming within his own knowledge, commands our assent. Whether this assent be founded, as some have supposed, in any innate principle, or be derived from experience, it is foreign to our present purpose to inquire; for, in the question of Deity, this evidence is unattainable. It is in the language of metaphor, that the phenomena of nature are said to *attest* his existence.

The next evidence, to which we would direct the attention of the reader, as applicable to matters of fact, is analogy.

The phenomena of nature are characterized by variety, and uniformity. In some we perceive a resemblance, and in others a dissimilarity. It is in similitude

that the evidence of analogy is founded. We seem to have an instinctive belief, that one and the same cause will continue to produce one and the same effect; and we have an irresistible conviction, that like causes will produce like effects. If a chemist, for example, finds, by repeated experiments, that iron is dissolved by the sulphuric acid, another chemist expects the same result, though the substances, which he employs, are individually different, but in their generic and special properties are precisely similar. We are conscious, that we perceive, that we feel, that we think, and that we will; and we infer, with absolute certainty, that other human beings have the same mental sensations, and powers. In both these cases the analogies are so close, that the subjects compared may be regarded as identical; and in truth, in all our general conclusions, respecting subjects numerically different, but specially the same, we are not considered as reasoning from analogy, though, strictly speaking, we are arguing from mere resemblance.

The evidence of analogy admits a va-

riety of degrees, and our conclusion is more or less just, as the points of resemblance are more or less important, or more or less numerous. Looking, for example, at physical circumstances only, we should deem it less probable that the comets are inhabited, than that the planets have inhabitants. There is a resemblance subsisting among all organic beings; but, in reasoning from the existence of any organ, power, or process in man, the most perfect of all, to the existence of the same in any inferior species, the probability would decrease, as we descended in the scale, from a human structure to the lowest grade of vegetable existence.

It is important, however, to observe, that, in order to justify a conclusion founded in analogy, it is by no means necessary, that the subjects should resemble one another in particulars, which constitute not the principal ground of a rational inference. It matters not, for instance, whether a clock be made of brass, or of iron, or of wood; though the materials be unlike, we still conclude design. A spinning machine bears no resemblance to a common watch,

either in form, in construction, or in effect; yet they are mutually alike, in the aptitude of the materials, in the curious construction of the parts, in the congruity of their arrangement, the harmony of their motions, and their concurrent operations towards the production of the effect. If any person should acknowledge, that ingenuity and design were displayed in the one, and yet deny, that the same qualities were manifested in the construction of the other, and merely because there was no mutual resemblance in the machines themselves, he would, we apprehend, incur the imputation of incorrigible perversity, or of irremediable blindness. This species of evidence will be found to be strictly applicable to the subject, which we are now discussing.

There is another species of evidence, which may be applied to many questions of actual existence, and which partakes of a mixt nature, resting partly on physical facts, and partly on scientific principles, namely, the doctrine of chances. This evidence, as determining degrees of probability, is highly useful, in many of the important, as well as the humbler, concerns of

human life; and furnishes a legitimate ground of belief, of disbelief, or of doubt. Though we do not concur with Mr. Hume, in the explanation, which he has given of the principle, on which our conclusion in such cases is founded, there can be no question of the fact itself, that the view of a certain number of possibilities on one side, and a certain number on the other, has a necessary influence, in determining our expectation of a future, as also our belief, or disbelief, of a reported past event. The nature of this evidence we proceed to explain.

Chance, though, in common language, represented as a cause, is nothing more, than an abstract name. Its import is purely negative. Sometimes it is opposed to skill, implying the absence of art, or ingenuity, but not of intention; expressing also an ignorance of the cause. If a person, for example, little versant in the game of billiards, endeavour, as it is termed, to make a hazard, which he knows to be difficult even to an experienced player, and though despairing of success, accomplishes his purpose, he says, that it was done by ac-

cident, or chance; for that he might attempt the same thing again fifty times without success. Here *chance* excludes dexterity, but not design; denoting, that the effect was not produced by the agent's knowledge of the means, and his power of employing them, but by some accidental circumstance, which he is incapable of explaining. As it is opposed to skill, so also it is sometimes opposed to intention, not however excluding a knowledge of the means, or how to apply them, as in cases, for example, of casual homicide. Sometimes it is opposed to both. When the painter, for instance, in a fit of passion, by a random dash of his brush against the canvass, produced the foam at the horse's mouth, which he had vainly essayed to execute by art, he would be said to do it by chance, and not by design. Here the term *chance* is opposed both to *skill* and *intention*. In every one of the three cases, the agent did not foresee the circumstances, by which the effect was produced, and might be wholly incapable of tracing their connection.

The doctrine of chances is founded

partly in experience, and partly in pure calculation. If out of an unknown number of black and white balls jumbled together, and concealed in a bag, I find, that, after a certain number of trials, for every white ball I take out three black, I conclude, that of those still remaining the majority are black; and, if I were to estimate the proportion from the trials, which I had made, I should be inclined to infer, that the white are to the black, as one to three. Here the problem is of a mixt nature. On the contrary, if I know, that there are in a bag sixty black and forty white balls, then the chance of taking out a black ball would be, as three to two. Here the conclusion, though founded in a fact, is purely scientific.

In calculating the probability of events, all of which are equally probable or improbable, no cause being known to produce one, rather than another, the doctrine of chances enables us to decide, what is the probability, that one of them shall take place, in exclusion of the rest. If there were a lottery of 1000 tickets, we should say, that it is 999 to 1, that number 10, or any other,

shall not be first drawn. But, if number 10 were the first drawn, not only in one lottery, but in several successive lotteries, we should not then regard the event, as a matter of pure chance, but should conclude, that there existed some secret cause, or concealed agency, by which the singular effect was produced. But, where there is no predisposing cause towards the production of one effect, to the exclusion of others, or where the *quantum* of the predisposition is known, the doctrine of chances enables us to ascertain, whether, and in what degree, any one, out of a given number of events, is probable, or improbable. Hence, in many questions of fact, this evidence is applicable and useful, frequently furnishing the foundation of a clear, incontrovertible, and unalterable judgement. It is acknowledged, by Mr. Hume, to be an unavoidable ground of doubt, or belief. How far this acknowledgement is reconcileable with his own conclusions, will form a subject of future enquiry, when we come to apply this evidence to the question, which we are here discussing.

We shall now subjoin a few observations

on the evidence of reason, considered merely as a discursive faculty. This constitutes the ground of all our deductions, whether in science, in philosophy, or in the business of common life. Our belief in every truth, not intuitively certain, and also in every fact, not referable to sense or consciousness, is resolvable into the authority of the rational power. The degrees of certainty or doubt, with which the evidence of reason is accompanied, vary indefinitely with the nature of the subject, and our knowledge of the *data*, on which our judgement should be founded. In questions of immutable relation, or subjects purely notional, we arrive, by the evidence of reason, at the highest possible certainty. Our conclusion excludes the possibility of doubt. Where facts constitute the ground of the argument, the deduction is more or less certain, the train of reasoning being presumed to be correct, as the facts are more or less incontestable. If they are incontrovertibly established, and the argument be scientific, as in cases of what is termed mixed mathematics, the conclusion is as certain, as the laws of

nature are invariable. But, where the reasoning is not of a scientific, but moral nature, the conclusion admits all the degrees of probability from the lowest to the highest.

There remains another species of evidence nearly allied to this, which has been denominated by some logicians intelligence, and by others, common sense, while by some it has been included under the evidence of reason, considered as the faculty, by which we distinguish truth from error. It is the foundation of our assent to all intuitive truths, not reducible to any of the preceding sources of knowledge. Whether common sense be a distinct faculty, whether its evidence embrace truths peculiarly its own, what is the distinguishing character of these truths, and how many they are in number, are questions which have been keenly agitated, and, in some recent instances, rather intemperately discussed. It seems, however, abundantly evident, that, if reason is to be regarded as merely a discursive power, by which we investigate truth, and thus distinguished from simple judgement, there would be a manifest ab-

surdity, in regarding intuitive truths as known by the aid of the rational faculty. Hence, several eminent metaphysicians have referred these truths to a distinct species of evidence *. But, if the import

* Mr. Stewart, who, in his second volume of "The Elements of the Philosophy of the Human Mind," has employed the term Reason in a more enlarged acceptation, has divided primary truths into two classes, denominating those, which constitute first principles, whence deductions are drawn, "the principles of reasoning;" and those, which lead to no conclusion, "the elements of reasoning," or "the fundamental laws of human belief." In *catoptrics*, for example, he observes, it is "a principle of reasoning," from which important deductions are drawn, that the angle of incidence is equal to the angle of reflection; and in mathematics, the axioms; in physics, a belief in the continuance of the laws of nature; and in our reasonings, a belief in our own identity, are "the elements of our reasoning." We will not incur the charge of a captious and hypercritical spirit, by objecting to the latter of these denominations, though we consider it to be inappositely chosen. But when Mr. Stewart designates them by the name also of "fundamental laws of human belief," he seems to us, to assign to things of the same character two incongruous appellations. A fundamental law of human belief must be something different from the truth believed. It is, for example, a law of human belief, that we cannot assent to a contradiction, that we cannot but believe in scientific truths, that we cannot believe in opposition to evidence, and that the degree of our

of the term be extended, and if *reason* be understood to signify that power, by which we discriminate, not only by deduction, but intuitively, between truth and error, wisdom and folly, there can be no occasion to name the evidence of intelligence, or common sense. At the same time, we would remark, that there exists so wide a difference between truths, to which we yield our assent as soon as they are proposed, the terms being understood, and those, which are evolved by a process of analysis, or scientific deduction, that to refer them to one and the same species of evidence, has a tendency to produce obscurity and confusion. In common language the distinction is unnecessary; but in the philosophy of evidence, it appears conducive to precision and perspicuity. Whatever, therefore, may be the number of the truths in question, we should be in-

belief be proportioned to the evidence presented. Surely the truths believed are to be distinguished from "the fundamental laws," by which our belief is governed. I believe in my own identity; that I continue the self same person is to me a primary and fundamental truth. By a law of my nature I must believe it; but the truth and the law are quite distinct.

clined to say, that our belief in them rests on the evidence of intelligence, or common sense, rather than on the evidence of reason, to which we refer our assent to propositions, whose truth is established by a process of deduction.

That the axioms, founded on the evidence of common sense, or intelligence, have been multiplied beyond necessity, seems undeniable; while, on the other hand, it is equally clear, that the attempts, which have been made to establish many of them by argument, have been eminently unsuccessful. Some of these truths, as connected with our present subject, we proceed to examine.

"Whatever has a beginning of existence must have a cause of existence," is an axiom referred to common sense. While one celebrated metaphysician has denied the intuitive certainty of this proposition, others have vainly endeavoured to prove it. Hume contended, that we may conceive a body starting from nothing into existence. That the image of such a phenomenon is possible, must be admitted; for whatever does not imply a contradic-

tion in sensation, may be imagined; but common sense tells us, that nothing can be the cause of itself. If the controvertist should contend, that he excludes the idea of a cause, and sees no reason why a substance should not spontaneously come into existence, which is in fact to produce itself, there would be an end of all argument. Further discussion would be fruitless. He must be allowed to abide by his own opinion, and the question must be left to the common sense of mankind.

"Like causes produce like effects," is another maxim universally admitted, and generally numbered in that class of truths, founded in the evidence of common sense. Were there not an impropriety in supposing the sentiment of belief to exist, where understanding is absent, our assent to this truth might be justly pronounced instinctive. The fact is undeniable, that children, long before they are capable of reasoning, and all brute animals, seem guided by an instinctive feeling of this truth, which supplies the place of rational sentiment. An association takes place between a certain antecedent, and a certain conse-

quent, and by an instinctive principle, when they perceive the one, they anticipate the other.

Nearly allied, if not strictly equivalent, to this axiom, is the maxim universally acknowledged, "that the course of nature will continue as it is." Our assent to this truth has been represented, by some metaphysicians, as founded in experience. We perceive, they observe, the laws of the moral and intellectual world operating with uniform regularity, which indicates a stable and permanent cause; and, if we have no reason to think, that the existing order will be subverted, have we not, it is asked, some reason to believe, that it will continue as it is? But, when it is said, that we have no reason to believe that the course of events will be changed, the meaning must be, that there is nothing existing in the present state of things, which should induce us to anticipate such a change. This may be. The present resembles the past; but how do we know, that the future will resemble both? Why have we no reason to expect an alteration, but because we perceive nothing likely to produce it—

in other words, because we expect or believe, that existing causes will continue to produce their usual effects? The question, however, still recurs, why do we believe this? For this persuasion no reason can be assigned. Our belief is founded in our mental constitution. "It is one thing," as Dr. Campbell observes, "to assign a cause, which, from the mechanism of our nature, has given rise to a particular tenet of belief, and another thing to produce a reason, by which the understanding is convinced." If we are asked, why we believe, that the halves of equals are equal, we can assign no reason for our assent; but such is the law of our nature, that we cannot but believe it.

From the cursory view which we have taken formerly of metaphysical, and now of moral evidence, the one including nothing but abstract relations, and the other referring to objects, which have a real existence, we may, in conclusion, repeat the remark, that the principal distinction between them consists in the immutable and absolute certainty accompanying the one, and the possible falsity, which may attend

the other. The contrary of a metaphysical axiom, or mathematical truth, is an absurdity, and an impossibility. The contrary of a physical truth implies no contradiction. It may be observed, also, as constituting another difference between these two species of evidence, that to scientific demonstration only one proof is necessary, while at the same time it admits no conflicting evidence; whereas, in moral discussions, every new argument corroborates the conclusion, and affirmative may be opposed by negative evidence. Hence all moral reasoning is susceptible of gradations, from the lowest degree of probability to the highest degree of moral certainty *.

Notwithstanding, however, the inferiority of moral evidence, and the possible falsity of the clearest moral truths, an appeal to our own minds will convince us, that they command our assent with equal authority, as truths resting on the impregnable ground of scientific demonstration. Our conviction, that a stone, dropped from

* Campbell on "Rhetoric," Book V. chap. vi.

the hand, will fall to the earth,—that we exist, perceive, and remember,—that there is such a city as Rome,—is as strong and as irresistible, as that mutually intersecting straight lines make the opposite angles equal. Where is the mathematician, who is not as firmly persuaded, that Euclid once lived, as he is convinced of the truth of any proposition in his "Elements"?*

It is a matter, too, peculiarly worthy of our attention, that every mathematical demonstration ultimately rests on the authority of memory. For, though it may not be necessary, in any analytical investigation, to recollect every step of our progress from its commencement to the conclusion, we must, notwithstanding, rely on the fidelity of this faculty for the conviction, that the series of propositions, by which we arrive at the conclusion, has been strictly demonstrated. Now, it is possible, that memory may have deceived us, and not only us, but all others also, who, on the same evidence, have assented to the same deduction. The supposition involves no

* Campbell on "Rhetoric," Book V. chap. vi.

contradiction, though its improbability is extreme. It is clear, therefore, that for our conviction that the conclusion is true, we must rely on the same faculty, by which we believe any past event; yet, though there is no absurdity in supposing, that our memories may prove fallacious, the deception being possible, this consideration nowise weakens our firm assent to the truth demonstrated, as immutably certain.

It has been observed, that, in investigating the causes of physical phenomena, we must ultimately rest on facts. Beyond these, our researches cannot penetrate. In the investigation of intellectual causes, we find a similar limit prescribed to our enquiries. We believe that a whole is greater than a part. If it be asked, whence arises this conviction, or what is the cause of our assent to this axiom, the only answer that we can return, is, that the law of our nature is such, that we cannot believe a contradiction. We are persuaded, that there exists something external to ourselves. We should enquire in vain for the cause of this belief, beyond the fact, that such is the constitution of our minds. How the

belief is produced, we know not. We are certain, that, if A is equal to B, and B equal to C, A must be equal to C. Here, also, we must resolve our belief into the same fact. To ground our conviction on the axiom, that things, which are equal to the same thing, are equal to one another, is merely to state our belief in a universal truth, as a ground for assenting to a special truth, leaving the question still to recur, why we believe the axiom itself.

SECTION XV.

In treating of metaphysical evidence, it was observed, that, being confined exclusively to abstract relations, it is wholly inapplicable to any question of fact, or of real existence. Accordingly, we find, on strict examination, that not a single process of abstract reasoning has been instituted, to evince the existence of an Intelligent First Cause, which may not be either evaded by an opponent, or in which may not be detected the circular sophism, or a *petitio principii*. A person, but little ver-

sant in metaphysical enquiries, and logical distinctions, but feeling the natural persuasion, that the world must have had an Author, may contend for his conviction, on the ground, that every effect must have a cause. The axiom is incontrovertible; but it is inapplicable to the point in question, until it be proved, that the universe is an effect. It may be argued, "that whatever begins to exist, must have a cause of its existence." This is a truth, equally indisputable; but in the question of Theism, and as directed against an opponent, maintaining the eternity of the universe, its irrelevancy is obvious. It is true, "that every contrivance must have a contriver"; but before the existence of the latter can be inferred, that of the former must be established. It is an axiom, "that nothing can be the cause of its own existence"; but this argument can conclude nothing against an opponent, who may contend, that the world is self-existent.

In attempting to prove the doctrine of Theism, it has been assumed as a metaphysical principle, "that design and intelligence may be inferred with certainty,

from marks or signs of it in the effect."* Every observation, offered by so enlightened a philosopher, and so excellent a man, as Dr. Reid, comes powerfully recommended to our approbation; but we apprehend, that the proposition thus stated, will be found, on examination, liable to the following insuperable objections. 1st, It may be urged, that, as applied by him to the doctrine of the Divine existence, it begs the question, by assuming the universe to be an effect. This objection alone seems fatal to its validity. If the existence of a Supreme Cause were admitted, and His nature or attributes were the subject in question, the argument would be applicable and conclusive; but as a proof of His existence, an adversary would reject it, as an evident paralogism.

2dly, It may be objected, that the proposition, as referring to human productions, is not universally true; and that the maxim, therefore, is not, without some limitation, entitled to our assent. Signs of intelligence, or appearances, which would

* Reid's "Essays on the Powers of the Human Mind," Essay VI. chap. 6.

lead us to infer design, are sometimes fallacious.

3dly, If the marks of design are assumed to be so unequivocal, as to exclude the possibility of an erroneous inference, the maxim, that signs of intelligence in the effect demonstrate intelligence in the cause, seems too much of an identical proposition, to be admitted as a metaphysical axiom, *demonstration of intelligence in the effect* being only an equivalent expression for *demonstration of intelligence in the cause.*

The learned author applies his maxim to the existence of Deity, and syllogistically states the argument thus. "Design and intelligence in the cause may with certainty be inferred from marks, or signs, of it in the effect." There are the clearest marks of design and wisdom in the works of nature. "Therefore, the works of nature are the effects of a wise and intelligent Cause." He adds; "One must either assent to the conclusion, or deny one, or other, of the premises." An opponent might deny the major proposition, until the precise meaning of the term sign should be defined. He would certainly object,

that the syllogism involves a fallacy, the minor proposition assuming, that the works of nature are an effect, which is the great doctrine to be proved. He would object, that the syllogism is illegitimately constructed, the subject in the major proposition, namely *the effect*, being changed in the minor into the *works of nature*, an error, which vitiates the argument, and falsifies the conclusion. If the reasoning were fully stated, it would proceed thus: "Marks of design in the effect prove design in the cause; the works of nature are an effect, and exhibit marks of design; therefore, the works of nature prove design in the cause." The fallacy here is obvious, the minor proposition assuming the universe to be an effect—the main point to be demonstrated.

Dr. Reid further observes, "Those among the ancients, who denied a God, or a Providence, seem to have yielded the major proposition, and to have denied the minor, conceiving, that there are not, in the constitution of things, such marks of wise contrivance, as are sufficient to put the conclusion beyond doubt." ... "Those

of later times... have chosen to make a defence against the major proposition, alleging, that the universe is a singular effect, whence no conclusion can be drawn."

Signs are either of a decisive, or of an equivocal nature. If a sign be of the latter character, the thing signified must be doubtful; if of the former, it must be certain. The conclusion, accordingly, must depend on the existence and nature of the signs; the proposition, therefore, of Dr. Reid, will be received, either as doubtful, or as true, according as the term *sign* is understood to mean either an existing token of an ambiguous character, or one, which is acknowledged to be unequivocal and conclusive. If the word be taken in the former unqualified sense, neither class of Atheists would admit the conclusion, as each would deny the major proposition. According to the latter sense of the term sign, each, unless assenting to a contradiction, must admit both major and minor, and therefore the conclusion. Unequivocal signs of intelligence in the effect, by the very terms, imply intelligence in the cause; and, if

they are admitted in an effect, it is absurd to suppose, either that the effect has no cause, or that the signified intelligence can belong to any thing, but the cause. In the one sense, therefore, of the term *sign*, the proposition is not universally true; and in the other, it appears to us to be an identical proposition. We presume not to anticipate the concurrence of the metaphysical reader in the validity of our last objection to the learned author's proposition; but, if he agree with us in thinking, that signs of intelligence in the effect can mean nothing, but intelligence in the cause, and that all signs are not equally demonstrative, he will probably concur with us in thinking, that the proposition is not stated with all that precision, which a metaphysical axiom requires, assumed as the basis of a most important argument*.

* Dr. Reid considers the proposition in question to be a necessary truth, and takes great pains to show, that this is a fundamental principle of belief, derived neither from reason, nor from experience. It would give us pleasure to concur with this amiable and distinguished philosopher, whose labours were uniformly on the side of religion; but his view of the subject appears to us to be erroneous. *Essays*, Book vi. chap. vi.

In every view of the subject, it resolves itself into a question of fact. "Are there, or are there not, conclusive proofs in the phenomena of nature, that they must be the productions of an Intelligent Author? And, if the affirmative be evinced, by such evidence as the question admits, and such as is deemed conclusive in all our other reasonings in matters of fact,—if it can be shown, that we must either assent to the doctrine of Theism, or renounce the common and acknowledged principles of human belief, the truth of a Supreme Intelligent First Cause must be regarded, as established on grounds of the highest moral certainty, excluding the possibility of rational doubt, or dissent. And here let me repeat, that it is a dangerous error to suppose, that moral evidence, on which this question rests, cannot be accompanied with the same firm conviction, as a scientific demonstration. The clearest mathematical truth, as has been already observed, does not lay a firmer hold on our understanding, or gain a more doubtless assent, than many which rest solely on the cogency of moral evidence. No mathema-

tician believes with less certainty, that he exists, and thinks, and wills, or that there are other beings beside himself, than that triangles, standing on equal bases, and between the same parallels, are equal. Though mathesis, therefore, may boast of being conversant in truths necessary and immutable, we should bear in mind, that it is as much a law of our nature to believe in certain moral truths, as in any abstract axiom whatever. No man can feel himself more certain, that two and two make four, than that he was alive yesterday.

SECTION XVI.

The Principles, on which the argument *a posteriori*, in favour of Theism, is founded, stated and explained.

We proceed now to unfold the evidence by which we establish the pre-eminently important truth, that there exists a Supreme and Intelligent Cause.

Wherever we find order * and regularity

* It has been attempted to invalidate the argument drawn from the general order and harmony of the universe, by denying, that order has any real existence. "It is in ourselves," says the author of "Academical Questions," "that we are to seek for the idea of order." .. "What we call the order of nature, is nothing else, than our particular manner of contemplating the eternal necessity of things;" and he adds, "that matter can be in no state, which does not result from its own properties, and which is not determined by its own laws." Academical Questions, p. 247.

It was never, we believe, imagined by any rational being, that the idea of order is to be sought any where, but in ourselves; it would, however, be truly a singular and absurd conclusion to infer, that, because the idea is in ourselves, there is nothing external correspondent to that idea, by which it is occasioned. The sensations of hardness and softness—the ideas of colour, figure, and motion, are in ourselves; shall we conclude, that there is

obtaining either uniformly, or in a vast majority of instances, where the possibili-

nothing hard or soft—nothing coloured, figured, or moving, by which the sensations, or the ideas, are excited? Our sense of pain may be "our particular manner" of feeling the application of hot iron to a naked limb; but are we hence to infer, that there is nothing external to cause the sensation, or that any other, than that of pain, could be produced? Our idea of order is as necessarily occasioned, by regularity of sequence in the phenomena around us, as any sensation, or any idea by its correspondent cause. When a series of phenomena A, B, C, D, has frequently presented itself to our observation, on perceiving A, we expect B, C, and D to follow, in regular succession; and when the phenomena answer to this anticipation, we say, that they occur in order; and when the expectation is disappointed by a derangement of the phenomena, we say, that they are in disorder. The notion and the perception are in ourselves; but the cause is external. The new phenomena may be occasioned by the operation of natural causes, which we did not foresee, nor perhaps can ascertain; but, as they are a deviation from the usual course of things, and not according with the wonted train of our conceptions and anticipations, occasioning perhaps some perturbation in our concerns, we regard them as disorderly and irregular.—And, whether the order, or its contrary, arise from physical causes, or form voluntary and intelligent agency, our notions and perceptions of regularity and irregularity remain the same. The author considers the order of nature to be nothing else, than our particular manner of contemplating the eternal necessity of things. Whether we consider

ties of disorder are indefinitely numerous, we are justified in inferring from this fact

order as the regular sequence of phenomena, or regard it as something merely ideal, this explanation must be rejected, as unphilosophical and false. An idea of order may be, and in fact is, occasioned by the contemplation of the external phenomena; but, unless we confound things, as different as cause and effect, the idea cannot be identical with the manner of contemplation. They are as distinct as the mode of an action, and the effect, which it produces. If order be external, it cannot be an idea; and if a mere idea, it cannot be the mode, though it may be the effect, of a voluntary act. On the author's assumed eternal necessity we shall forbear at present from offering any remarks.

The Sceptic, adopting the opinion of Spinoza, denies, that there is any such thing as disorder in the natural world (p. 249.) "Order or disorder", in his judgment, "has no place but in our imaginations." (p. 265.) If we enquire into the ground of this paradoxical opinion, we are not referred to the ordinations of an Intelligent Cause, in whose omniscient eye, "all discord is harmony"; but the reason assigned is "because matter is always obedient to the laws of its own being." According to this extraordinary doctrine, earthquake, hurricane, and inundation, may desolate the earth, the usual functions of the animal economy may be disturbed, the liver may not secrete, the stomach may cease to digest, and palsy may unnerve a limb, but there is no disorder because the effects are those of an eternal necessity, and "matter obeys its own laws." In what strange paradoxes does the Atheist indulge? Might we not with

an intelligent cause. If we discovered the first five letters of the alphabet lying on a table, in their proper order, we should without hesitation conclude, that they were thus placed by some person, acquainted with their usual arrangement, because we should, without ascertaining the precise chance (119 to 1) intuitively perceive, that the possibilities of a different order are many, and that there were, therefore, numerous chances against their being thrown into this order by accident. But, if we found all the letters of the English alphabet, lying in their proper order, we should pronounce it almost an utter impossibility, that this order could arise from any thing else, than design, the chance against it, being 403,291461,126605,635583,999999 to 1. And, if we discovered, that, not only in one instance, but in numberless other instances, the letters were so placed, the

equal reason affirm, that there is neither light nor darkness, because the earth is obedient to the "laws of its own being." To a sophist, who should affirm, that heat is not in the fire, but merely in our manner of feeling the presence of the fire, we should deem it sufficient to reply, that an *equivoque* is not an argument, nor a quibble a proof.

conviction would be irresistible, that intelligence had been employed in these arrangements. Here is a matter not of mere opinion, but of mathematical calculation. We are firmly persuaded, nor would it be possible to alter the conviction, that the sun will rise to-morrow; but, if he had risen a million of times without interruption, it would not furnish so strong a ground of belief, that he will rise to-morrow, as these arrangements would afford of intelligence, and design. Whenever, therefore, we find order and regularity obtaining uniformly, or in a vast majority of instances, where the possibilities of disorder and confusion are indefinitely numerous, we necessarily conclude, and cannot but believe, that intelligence was the cause.

It may be asked, what is the ground of this belief? why do we infer intelligence from order and regularity? Is the conclusion founded in reason, or is it the result of experience? The inference is immediate and irresistible; the perception is as clear, and the conviction as strong, as that a less number cannot be equal to a greater;

certainly, in many cases, as strong, as an immeasurable preponderance of evidence can produce. It is intuitively obvious, that, out of any given number of equally possible results, the chance of one taking place in exclusion of the rest, must be as 1 to the number of the others. Our belief, therefore, that a given one will not take place by accident, must be more or less strong, as the others are more or less numerous; and, where an indefinite number on one side is opposed to unity on the other, to believe, that unity will, not only in one instance, but in an indefinite number of similar instances, be accidentally the result, is much the same as to believe, that unity is equal to infinity. If a person were asked, on what ground he believed, that out of 1000 balls, 999 black and 1 white, he should not blindfold take out the white one at the first trial, he would naturally and pertinently say, that there were 999 chances against 1, and that he could not, therefore, assent to the probability of selecting the white one, without believing the absurdity that 1 is equal to 999. He would admit the possibility, but would intuitively

perceive the great improbability of succeeding at one trial. And, where one possibility is opposed to others indefinitely numerous, the single possibility may be regarded, as an evanescent quantity, and the improbability amounts almost to a metaphysical impossibility. Where the possibilities on each side are ascertained, the conclusion rests on scientific evidence*.

* The explanation given by Mr. Hume of the ground of our belief in such cases, is delivered in terms, rather loose than philosophical, and, as a developement of the principle, is obscure and unsatisfactory, involving, at the same time, its author in inconsistency, and self-contradiction.

Mr. Hume supposes a die with a thousand sides, all marked alike, and with one other side, marked differently. "The mind," he says, "finding a greater number of sides concur in one event than in the other, is carried more frequently to that event," . . . . and he observes, "that this concurrence of several views in one particular event, begets immediately, by an inexplicable contrivance of nature, the sentiment of belief, and gives that event the advantage over its antagonist, which is supported by a smaller number of views, and occurs less frequently to the mind." This attempt at explanation exhibits, we conceive, more of loose metaphor, than philosophical precision. As an evolution of the principle of belief, it amounts to nothing. At the same time, it will not es-

Dr. Reid delivers it as his opinion, that the doctrine of chances has contributed nothing towards the conclusion, that ar-

cape the attention of the reader, that, when the author represents nature as contriving, if he does not employ language intended to express nothing, he asserts at once an absurdity, and a contradiction. For, as he dismisses the existence of an Intelligent First Cause, he can mean nothing, by the term nature, but the properties of matter acting by necessity. Is it not, then, an egregious absurdity to suppose, that unintelligent properties can be capable of contrivance? And is it not a glaring inconsistency to assert contrivance, and at the same time to reject the notion of final causes? He excludes design, yet affirms contrivance.

In all our calculations of chance, it is so clear as to be assumed as self-evident, that, if any event may take place in any number of ways (n), the probability, that it will take place in one of them, is $\frac{1}{n}$. This is a mathematical truth, founded in the relation of the possibilities on one side to those on the other. The ratio of the probability, where the necessary *data* are not all known, it may be impossible to compute; and even in simple cases, where they are perfectly understood, the calculation may exceed the ability of one, not versant in the science of number. But, where the possibilities on one side clearly preponderate over those on the other, there is an intuitive evidence of probability in favour of one of the former, though the degree of that superiority may not always be ascertained; and where the preponderance is indefinitely great, the evidence is resistless, and has the force of demonstration.

rangement of parts must proceed from intelligence and design. His reason is, "that the doctrine of chances is a branch of mathematics, little more than a hundred years old. But the conclusion drawn from it (the arrangement of parts) has been held by all men from the beginning of the world. It cannot, therefore, be thought, that men have been led to this conclusion by this reasoning."

It is not imagined, that the inference depends on any nice calculation of chances, nor is a scientific computation necessary to the conclusion. A person, wholly unacquainted with arithmetical science, may be unable to calculate the chance, that the letters of the alphabet shall be accidentally thrown into their regular order; but he perceives intuitively, that the chances against it prodigiously overbalance those in its favour. This is sufficient for his conviction. And, however recent may be the origin of that branch of mathematics, called the doctrine of chances, it is evident, that the ancients availed themselves of the general principle, on which our proposition is founded, and adopted similar illustrations.

In arrangements contrived by human ingenuity, scientific calculation of chances is attainable; but in the immensity and complexity of the arrangements of nature, this accuracy is equally impracticable to us, as it was to the ancients. Cicero, speaking of those philosophers, who believed the universe to have been made by chance, reasons thus: "Hoc qui existimat fieri potuisse, non intelligo cur non idem putet, si innumerabiles unius et viginti formæ literarum vel aureæ, vel quales libet, aliquô conjiciantur, posse, ex his in terram excussis, annales Ennii, ut deinceps legi possent, effici; quod nescio anne in uno quidem versu possit tantum valere fortuna."* Here the term *fortuna* means "chance"; and whether personification be implied in it, or excluded, the argument is the same; nor was the validity of the reasoning in the least degree affected, whether Cicero was, or was not, acquainted with the doctrine of chances. The conclusion, in such cases, is not the result of any nice or laborious mathematical computation; but is founded

* Cic. de Nat. Deor. lib. ii.

in the immediate perception of the vast preponderance of the possibilities on one side, over the single possibility on the other. Whenever, therefore, we find order and regularity obtaining, where the chance of order is one, and the chances of disorder indefinitely numerous, we are justified in inferring, and by necessity we conclude, that design, and not accident, must have been the cause. Nor is it possible to draw any other conclusion, without violating an established principle of belief, acknowledged even by the Sceptic himself, in all his reasonings concerning matters of fact, —a principle which science teaches, and which experience serves to confirm. This is our first proposition. The absurdity of Hume's hypothesis, of a principle of order inherent in matter, we have already, it is hoped, sufficiently exposed. (See p. 186.) The hypothesis will again come under our review.

It may perhaps be objected, that we beg the question, when we assume, in our argument, that the possibilities of disorder are infinite. It may be contended, that order and disorder are the results of neces-

sity, and that not a single atom could have been in any other than its present place, or in any other than its existing modification, for that all is governed by this eternal and universal principle. What proof does the Atheist offer of this eternal necessity? Will he maintain the contradiction, that the experience of an hour is equal to the experience of ages, or that the experience of ages is equal to that of eternity? or will he affirm, that an eternal necessity can be proved by any, but an eternal, experience? He must either assert this contradiction, or acknowledge that his dogma has no foundation whatever, on which to rest.

We do not assume, without sufficient evidence, that the possibilities of disorder are infinite. Irregularities actually exist. Every anomaly, every malformation, vegetable or animal, every noxious air, every ache, every disease, every example of idiotism or insanity, in short every evil, proves not only the possibility, but the actual existence of combinations productive of results, contrary to the general order, beauty, and happiness of the system. Why these are not multiplied into an inde-

finite majority, we perceive no rational cause, but in the ordinations of Intelligence. And, if, according to the hypothesis of the Atheist, the universe be ruled by necessity, we can see no reason, but the bold and gratuitous assumption, that every thing must be, as it is, why this is not a necessity of discord, confusion, and suffering. To assert, that this principle could produce nothing but a large preponderance of good, is to invest it with wisdom; and to contend, that nothing can exist, but what does exist, if not to ascribe intelligence to necessity, is to beg the question, while it leaves the phenomena in the natural, and more especially, in the intellectual world, wholly unexplained. It is sufficient, however, for our argument, that disorder and injurious combinations of causes and effects do exist, and that an indefinite multiplication of these is conceivable, and therefore possible. Nor can this possibility be questioned, until the Atheist shall prove, 1st, That matter and its properties are eternal, and necessary. 2dly, That order is no indication of intelligence, as its cause, and, 3dly, either show,

that, what we regard as order in human concerns, is not order in the phenomena of nature, or explain, why we should ascribe that regularity and harmony to the agency of impercipient atoms, or a senseless necessity, which, in every other exhibition of these qualities, we attribute to wisdom and design. His superficial appeal to facts, in evidence, that order does result from the properties of matter, will not avail him. He must reconcile the existence of these properties, as ultimate causes, with one of his own favourite maxims, and show, how an unintelligent cause can communicate, what it does not possess, having no conception of order, yet producing order, having no intelligence, yet imparting intelligence.

We now proceed to state our second proposition; it is this. Wherever we find numerous concurrences of means, various and complicated, towards the production of effects, we are justified in inferring an intelligent cause. These furnish conclusive evidence of design; and design necessarily implies the existence of intelligence.

Whether this inference of skill and de-

sign from such concurrences of means to ends*, all necessary, and all contributing to the effect, be a deduction from experience, as some have supposed, or be the result of reasoning, as others have maintained, or is to be considered as a first principle, originating in what has been termed intelligence or common sense†, it

* The reader is requested to observe, that the term *end* is not here employed, as equivalent to *purpose*, or *design*, for, in this sense, we should beg the question; but in its strict and primitive signification, as denoting simply *issue*, or *effect*.

† "Our conviction of the existence of a designing cause, when we perceive certain regular and constant effects, is so inborn and natural to the mind, that it may be classed among those intuitive truths, that need no argument to support them."—*Tytler's Memoirs of Lord Kames*, vol. i. Appendix, p. 24.

It has been already remarked, that the principles, in which our belief in certain universally acknowledged truths is founded, have been subjects of considerable discussion and doubt. Some have derived our belief from experience, some have affirmed the principles to be intuitively true, and others have contended, that they are not first principles, but capable of proof, in opposition to those, who maintain, that they are neither deduced from experience, nor taught by reason, but that our belief in them originates in a principle of intelligence, constituting, as has been observed, a distinct source of moral evidence. Amidst this diversity of opinion, may there not, in such

is in theory, as well as in the conduct of common life, universally admitted. The

cases, be one criterion to which we may safely appeal? We know, that certain feelings and passions, certain appetites and desires, with certain voluntary and all involuntary, or spontaneous, animal functions, are necessary to the preservation of the species. They are, therefore, instinctive. There are, in like manner, certain principles of belief, equally indispensable to our being, without which the animal man would soon perish. His existence would be brief indeed, if they were left to be collected from the informations of experience, or the deductions of reason. These, therefore, are also instinctive. Hence I believe, that I exist, that I perceive, that I remember, that I reason, that there are things external to myself, that I continue to be one, and the same being, that nothing can begin to exist without a cause, and that similar causes produce similar effects. My belief in these truths is essential to my existence, and is inseparable from the constitution of my mind. But whatever principle of belief is not immediately essential to the preservation of our being, and may be left to the discoveries of experience, or the investigations of reason, cannot consistently, with the known fact, that nature does nothing in vain, be regarded as instinctive. If we wish then to ascertain, whether our assent to any truth is to be referred to reason, or experience, might not the question be determined, by enquiring, whether our belief, or some instinct supplying its place, before we are capable of belief, is, or is not, necessary to our existence; and, if we ascertain the affirmative to be true, may we not justly consider our belief to be instinctive? If, on the contrary, the

Sceptic himself does not venture to controvert it. Here then we meet on undisputed ground.

Were we to offer an opinion on the question, why we infer intelligence and design from the concurrence of various and complex means, towards the production of an effect, we should be inclined to say, in consistency with the hypothesis, expressed in the note, that this inference is not founded in common sense, or any single instinctive principle. It rests, we conceive, like our assent to the preceding proposition, partly on the clear evidence of mathematical probability, which alone constitutes a sufficient foundation for belief, partly on consciousness, and the closest possible analogy, and partly on the connate and resistless principle of belief and action, that similar effects result from similar causes. The most uncultivated human being, in the rudest state of society, has the

negative is true, may we not warrantably conclude, that our conviction is left to be acquired by experience, and the rational faculty? That much of our knowledge is derived from neither of these two sources, appears to us to be one of the clearest truths, in the philosophy of the human mind.

fullest conviction, that he occasionally exercises his understanding, in devising means for the accomplishment of an end. He knows, that some skill and some contrivance are necessary, for making his bow, and his arrows, his fishing-tackle, his canoe, and his hut. He observes others employed in similar operations; and perceiving similar effects, reasoning from analogy, he cannot but infer similar causes, and similar designs. The most untutored human mind draws this conclusion; nor can it be necessary to observe, that the same inference will follow from the inspection of works exhibiting still greater ingenuity. A watchmaker, conscious of the exercise of intelligence, in constructing the wheels, the pinions, the chain, the barrel, and the other parts of the machine, and arranging them in proper order, for the accomplishment of a certain purpose, when he perceives another artisan similarly employed, infers by analogy a similarity of design, and the exercise of an intelligence, resembling that, of which he himself was conscious, when he constructed his own. Nor is it possible for him to draw any other

conclusion, when he sees this, or any other similar piece of mechanism. Nor is this a deduction peculiar to his mind. The aptitude of the means employed to the production of the effect, and the complexity of these means, which he feels it impossible to ascribe to accident, must impress every other rational being with a similar conviction. The concurrences of means to ends, inexplicable on any rational supposition but one, must be intuitively evident. He perceives, that the wheels are made of brass, to prevent them from rusting, that they are nicely adjusted one to another, that the spring is of steel, no other metal being so fit for its purpose, that the dial-plate is protected from dust, and the hands from derangement, by a convex piece of glass, which serves also to let the hands be seen, that there is a regulator for retarding and quickening its motions, if necessary, and that there is a key attached to it for winding it up, and continuing its motion*.

* Similar to the illustration by a watch, as originally offered by Nieuwentyt, and adopted by Paley, is the planetary globe of Cicero. "Si in Scythiam aut

He observes, that the absence of any one of these circumstances, a difference of materials, the want of a single wheel, or even a single tooth, a wheel of a different construction, any other than the existing arrangement, would either entirely prevent the motion, or render it less regular and equable. Such a subserviency of every part to the production of the effect, nothing wanting, nothing being redundant, such a correspondence and congruity between every tooth, every pinion, every wheel one to another, and particularly the adjustment of the fusee to the varying force of the spring, and all concurring to effect equal motions in equal times, must convince him, if he has ever known, from the exercise of his own judgement, how to adapt means to

Britanniam sphæram aliquis tulerit, hanc, quam nuper familiaris noster effecit Posidonius, cujus singulæ conversiones idem efficiunt in sole, in luna, et in quinque stellis errantibus, quod efficitur in cœlo, singulis diebus, et noctibus, quis in illa barbarie dubitet, quin ea sphæra sit perfecta ratione? Hi autem dubitant de mundo, ex quo oriuntur et fiunt omnia, casune ipse sit effectus, aut necessitate aliqua, an ratione, et mente divina; et Archimedem arbitrantur plus valuisse, in imitandis sphæræ conversionibus, quam naturam in efficiendis." *Cic. de Nat. Deorum.* lib. ii.

ends, that intelligence must have been employed in the construction of the machine.

It has been denied by some Sceptics, that we are warranted to infer design from orderly arrangements, and from aptitude of means to ends; or to conclude, that a thing was made or done for a certain purpose, merely because it answers that purpose. All, they maintain, that we have a right to affirm is, that something has been effected; but, without being acquainted with the intention of the agent, they contend, that we are not justified in concluding, that the effect was designed. This is, in fact, to deny, that the end can ever be inferred from the means—a dogma so repugnant to the universally established principles of thinking and acting, that it may seem scarcely entitled to a serious consideration.

It is, doubtless, true, that the mere effect is not universally an infallible criterion of the motive, or the intention. A benefit may result, where the motive was malignant, and accident may occasionally produce, what has the appearance of design. The purpose answered is not uni-

versally the purpose intended. But, as it would be irrational to infer the design, in every instance, from the effect simply, so it would be still more unreasonable to maintain, that in no case are we justified, in concluding design from a view of the effect, and an examination of the means. Every day presents us with instances, in which the result, considered in conjunction with the mode of its production, so clearly evinces the purpose intended, that a person, who should presume to deny the conclusion, would incur the imputation of stolidity, or idiotism. Mr. Hume composed an "Essay on Miracles." He surely would not have scrupled to acknowledge, that the intention of the author might be inferred, with certainty, from the tenor of the work, though that intention was not avowed. And, while he was occupied in this production, had he seen the loose letters composing the words, "An Essay on Miracles, by D. Hume, Esq." lying on his table, arranged as they are here, he would not have doubted for a moment that this arrangement was designed, nor would he have waited to be informed,

that such was the fact. If he had never seen or heard of such a mechanical invention, as the block machine at Portsmouth, and had for the first time viewed it at work, would he have doubted for one moment, or would he have felt it necessary to be assured, that the end effected was the end designed? Would not the purpose of the machinist have sufficiently disclosed itself, in the construction and action of this singular piece of mechanism?

If indeed intelligence and design were not deducible from orderly arrangements, and from adjustments of means to ends, it would be impossible for any man to ascertain, that there exists in the universe a single intelligent being, beside himself. How could intelligence be known, but by its effects? It is not an object of perception. Intention or design may be declared; but that, by which the intention may be executed, is neither visible, nor audible, nor tangible; it can only be inferred from the means, by which the design is accomplished. If this be our invariable and incontrovertible inference in all instances, where human art is concerned, our only

enquiry now is, whether, as the Atheist alleges, the works of nature furnish any rational exception to this conclusion. He admits the justness of the deduction, in cases of human ingenuity, because we learn by experience, that certain productions are effected by the skill and industry of certain workmen; but he contends, that the inference must be confined to these productions, because our experience does not extend beyond the results of human power, and because there is no resemblance between the works of man, and the operations of nature. "If we see a house," says Mr. Hume, "we conclude it had an architect, because this is precisely that species of effect, which we have experienced to proceed from that species of cause. But surely you will not affirm that the universe bears such a resemblance to a house, that we can, with the same certainty, infer a similar cause, or that the analogy is here perfect." No, Mr. Hume, we do not infer from works not *precisely similar*, a precisely similar cause. For the production of worlds, and systems of worlds,

we require a higher architect, than for the erection of a house.

"We are so accustomed to human art," says an ingenious and able writer, "that every work of design and use will be attributed to man. But, what, if it exceed his known powers and faculties? This supposition does not alter the nature of our feelings, but only leads to a different cause, and, in place of man, to determine on some superior power. If the object be considered as an effect, it necessarily involves the idea of a cause. And the cause cannot be man, if the object of our perception be an effect, far surpassing the power of man. Attend but to the anatomy of the meanest plant. So much of art and curious mechanism is discovered in it, that it must be the production of some cause, far surpassing the power and intelligence of man. The scene opens more and more, when, passing from plants to animals, we come to man, the most wonderful of all the works of nature. And, when at last we take in, at one view, the natural and moral world, full of harmony, order, and

beauty, happily adjusted, in all its parts, to answer great and glorious purposes, there is in this grand production necessarily involved the perception of a cause unbounded in power, intelligence, and goodness."

Though we cannot concur with the learned author *, who advocates the opinion, that our conviction of Deity is resolvable into a mere feeling or perception, we consider the argument, as addressed to the understanding, to be unanswerable and conclusive. Works of intelligence and design within the compass of human power, we ascribe to man; and if the production vastly exceed his known ability, this does not alter the necessary conclusion; it only leads to the conviction of a greatly superior power. But let us examine Mr. Hume's atheistical argument.

It divides itself into two objections: 1st, There is no resemblance between a house, or any work of human art, and a

* See an anonymous work published in 1751, entitled, "Essays on the Principles of Morality and Natural Religion."—The author is known to have been Henry Home, Esq., afterwards Lord Kames.

world. 2nd, We have no experience of the fabrication of a world.

The invalidity of the first objection, it does not require much penetration to discover. It proceeds on the assumption, that intelligence and design are not to be inferred, unless in cases, in which the effects are similar to known effects. This position we deny; and, on the contrary, contend, that the similarity of the effects neither have, nor ought to have, the least influence in determining our judgement. The solution of a mathematical problem, and the construction of an air-gun, we should naturally refer to different kinds of ingenuity; but the dissimilarity of the effects would not bar the conclusion, that each proceeded from intelligence, as the cause. There is not the least resemblance between an organ, and an orrery. Their construction and their purposes are wholly unlike; yet a person, were he acquainted with the latter, and had never seen the former, or even heard of it, would, notwithstanding, on examining its structure, refer it, without hesitation, to the exercise of in-

genuity. His conclusion is not precluded by the dissimilarity of the machines, or the singularity of the result, exhibited in the latter; it rests on the curious and complicated adjustments of causes to effects. The dissimilitude suggests the notion, that a different species of skill has been employed in the invention and construction of these two pieces of mechanism, and the probability, that they were constructed by two different artisans; but the inference of ingenuity rests solely on the aptitude of the various materials, the congruity of the several parts in respect to form, size, and position, and the fitness of each to perform its office. That degree of resemblance, therefore, for which Mr. Hume contends, is by no means necessary to the legitimacy of our conclusion. We grant, with him, the dissimilarity of a house and a world, in various important respects, in magnitude, in form, and in subserviency to certain ends; but, in that essential particular, which is the foundation of our argument, they bear an evident resemblance, as exhibiting aptitudes and relations indicative of design.

In Hume's "Essay on Miracles," it is one of his primary maxims, that our belief must be governed by the balance of evidence. His whole argument rests on this principle: "In all cases," he observes, "we must balance the opposite experiments, when they are opposite, and deduct the smaller number from the greater, in order to know the exact force of the superior evidence." In his Essay on "Probability," he sets out with the same acknowledged principle. "There is," says he, "certainly a probability, which arises from a superiority of chances, on any side; and, according as their superiority increases, and surpasses the opposite chances, the probability receives a proportionable increase, and begets a still higher degree of belief or assent, to that side, on which we discover the superiority." This is precisely our argument; and its validity is here admitted by the Sceptic himself. Let him proceed, then, by a similar rule, in examining any instance of harmonious arrangement, or aptitudes of means to ends. Let him, for example, calculate the chance, that the muscles and

bones of the human body should be all so adapted one to another, and all so arranged by accident, and let him calculate the possibilities on the other side; let him then balance the account; and we scruple not to affirm, that he must either abandon his own principles, or come to the same conclusion with us. He assumes a maxim, for the regulation of our belief, which, while it corroborates our argument, subverts the hypothesis, which he studies to establish. If the conclusion, then, of intelligence and design, rests on the concurrences of means to ends, and on the balance of evidence, from a view of the chances or possibilities on each side, it is clear, that the legitimacy of our conclusion has no dependence whatever on the similitude, or the dissimilarity, of the effects. A disparity in these may lead us to refer them to different degrees of power, and different degrees and kinds of ingenuity, and therefore, in these respects, to dissimilar causes; but the inference of power and intelligence in all is founded on the congruity displayed in the mate-

rials, the form, and the collocation of the parts, and their concurrent aptitudes to the effect produced. Wherever these characters are exhibited, no dissimilarity, in respect to structure or effect, can in any degree weaken the validity of our conclusion.

It is objected, 2ndly, That we have no experience of a world being made. It is granted; but, unless our experience is to be assumed, as the measure not only of fact, but of possibility, this furnishes no argument, that the world was not made; and if made, that the nature of the cause is not deducible from the nature of the effect.

It seems vain to argue with a man, who requires for his assent to a proposition a species of evidence, which he knows to be impossible, and which, if in any degree attainable, would, by his own argument, be nugatory, and inconclusive. The Atheist requires for his belief in a Supreme Cause, that he shall have clear and positive experience of the production of a world. Let it be supposed, then, though

we are aware of the extravagance of the conception, that we behold a world made, that we see a new planet gradually forming, assuming its place in the planetary system, and revolving round the sun. Let it be supposed, also, that the process of formation were subjected to our examination. What, according to the dogma of the Atheist, should we then believe? Just what he would persuade us to believe now. For, if his argument have any weight, a world is so different from a house, or any production of human art, that, if we beheld twenty worlds constructed, there being no resemblance between them and any work of man, we must not, agreeably to the *dictum* of the author, argue from intelligence and design displayed in the latter, to the same qualities as employed in the former. "A world", says the Sceptic, "bears no likeness to a house." The new phenomenon, therefore, would leave the Atheist in his present predicament of doubt, or unbelief.

But, perhaps, Mr. Hume's reasoning requires, that, as we have ocular evidence of the architect in the one case, we should

have the same evidence in the other also; and we should thus learn from experience, that worlds have makers, as houses have architects. How monstrous is such an argument! It would be a prostitution of reason to treat a notion so preposterous, with a grave refutation. Such experience is a physical impossibility, and its requisition absurd.

We are conscious of devising certain means for the accomplishment of certain purposes. We are conscious of an exertion of our intellectual faculties, in contriving these means. We can review, step by step, the mental process, by which we arrive at the desired conclusion, in forming the plan; we can retrace, in the execution of it, the chain of causes and effects, framed in our own minds, from the first spring of action to the final result, all terminating in the end proposed. We perceive similar series of causes and effects, similar concatenations of concurring circumstances in the productions of others; we therefore necessarily refer them to a similar exertion of intellectual power. Experience, however, gives us no information of these

powers. Their existence is inferred, and not perceived. The hands, which execute, are but the instruments of the real and superior agent, the active, willing, and reasoning mind. The intelligence exerted is not an object of perception, yet we conclude from its effects the certainty of its existence. Neither the singularity, nor the novelty, of the result precludes this inference, because it is deduced, not from the effect as either a solitary or a common phenomenon, but as exhibiting congruities of relation, and adjustments of means to ends. If the Atheist can shew, that these adjustments in the economy of nature differ from the aptitudes and correspondences in works of art, except in the infinite superiority of the former in number, in magnitude, and in utility, we will acknowledge our inference to be false. But this superiority, so far from conducting to the conclusion, that there is no intelligent cause, serves only to direct us to an infinitely higher cause.

Experience enables us to refer specific works to specific agents. We attribute a palace to an architect, a chronometer to a

watchmaker, a poem to a poet, a nest to a bird. But if a machine were presented to us, new in its principle of motion, in its structure, and in its effect, though we should not be able to refer it to any particular class of machinists, though we had not seen it made, and had no experience whatever of such a machine, we should refer it, notwithstanding, to an intelligent and designing cause. The novelty of its effect, the singularity of its construction, and the employment of a new power, might incline us to attribute a very high degree of ingenuity to the machinist; but could not possibly lead to the conclusion, that it had no maker.

But, as great stress has been laid on this objection by Hume, and other writers of the same school, we will detain the reader for a moment, while we put a case to the Atheist, in which his judgement will be found to be at variance with his argument. For this purpose, we shall adopt a very familiar illustration. Let us suppose, that a nest were presented to him, constructed in the same form, and composed of the same materials, as are employed by a cer-

tain well known species of bird, what would be his conclusion, respecting its cause? He would refer it to a bird as its maker, because, as he says, experience teaches him, that such things are constructed by birds. But suppose, that he were assured, not only by one, but by a number of persons, on whose veracity he could rely, that the nest was not the work of a bird, would he doubt for a moment, that ingenuity and design had been concerned in its construction? Would not the apt selection of the materials, with their orderly, compact, and commodious arrangement, convince him of the fact? Does not then his conclusion clearly shew, that the inference of ingenuity, or intelligence, is wholly independent on the knowledge, that certain works are executed by the skill of certain artizans. And, though he might perceive his error, in referring the construction of the nest to that species of cause, which experience teaches, he would still feel the inference irresistible, that it was the production of ingenuity.

In all such investigations of causes, there are two distinct questions. The

first is, Had the piece of mechanism, or, that we may not assume the point in question by the use of a term, had the object, exhibited to our examination, a maker? And if the affirmative is granted, the next is, Who was its maker? These two questions Mr. Hume's argument seems to confound. He omits to distinguish between the inference of skill and intelligence simply, and the inference of a certain species of these; between the inference of a cause, and the inference of a specific cause. The former, that is, an intelligent cause simply, is deduced from the aptitudes of means to ends; the latter, that is, the specific cause, is inferred from the similarity between the production exhibited, and the productions, which we have learned from experience, proceed from the ingenuity of a particular class of workmen. To the former conclusion, experience of such a production is not necessary; our inference rests on other grounds: to the latter it is indispensable. Nothing surely can be more repugnant to reason, or less reconcileable with the common principles on which we think and act, than to deny a

cause, because we have not seen the cause; to deny that the world was made, because we have never seen a world made; or to deny that beauty, harmony, and utility, with the most astonishing adjustments of parts to parts, and of systems to systems, are to be referred to an Intelligent Author, because that Adorable Being is to be apprehended only by the mind, and is not an object of corporeal sense.

Mr. Hume, perceiving it would seem, that he must abandon the position, that we are not justified in concluding intelligence and design from curious and complicated aptitudes of means to ends, and feeling that the human mind is so constituted, that this inference is irresistible, assumes another position, and would persuade us, that this inference is imputable to the peculiar constitution of man,—that other beings are very differently framed,—and that intellect and design belong to man alone. He denies, that "we have any reasonable ground to conclude, that the inhabitants of other planets possess thought, intelligence, reason, or any thing similar to these faculties

in man. When nature", he observes, "has so extremely diversified her manner of operation in this small globe, can we imagine, that she incessantly copies herself throughout so immense a universe? And, if thought, as we may well suppose, be confined merely to this narrow corner, and has even there so limited a sphere of action, with what propriety can we assign it for the original cause of all things?"

Here we have again his favourite idol, Madam Nature, introduced to our attention. She disdains, we are told, *incessantly to copy her own self*, and exercises her inventive powers in the procreation of various and dissimilar beings, clothed in different forms, and endowed with inconceivably different powers. Under the pencil of Mr. Hume, this lady is truly an astonishing personage. But without enquiring strictly into her pretensions, or examining minutely her attributes, her volitions, her inventions and operations, let us, in sober reason, look at his argument, and we shall find, that his premises and his conclusion

are mutually repugnant. While indulging his fancy, he has subverted his argument. He tells us, that Nature does not *incessantly copy herself*. This observation clearly implies, that, though not her constant, this is her general, procedure. If, then, Nature does in general copy herself, what would a man of common understanding thence naturally infer? Not, surely, what the author concludes, but the very reverse; not that she limits her transcriptions to this planet, but extends them beyond it. Had he said, that Nature never copies herself, his conclusion, though drawn from a false statement, would at least have been consistent with his position. But, first to state that Nature does not incessantly, which, in other words, is to say, that she does generally, copy herself, and then to restrict her transcripts to a speck in the universe, is truly a singular contradiction. Yet such is Mr. Hume's extraordinary conclusion; for, if not so, what he considers to be a well-founded supposition, "that thought is confined to this narrow corner," and that man, as possessed of intellect, is a perfect unique in creation, is a loose, gratuitous,

and unmeaning observation. But the intelligent reader, who is acquainted with Mr. Hume's productions, needs not to be informed, that this is not the only instance, in which this eminent sceptic slips ingeniously, and, at the same time, with admirable ease and complacency—too often drawing his reader along with him, into a conclusion, as if indisputable, which nothing which precedes can warrant, nay, which sometimes, as in the present instance, his own premises clearly contradict.

Of creatures, who have no faculties similar to our own, we can form no conception. If they have "no thought, no intelligence, no reason," we can only liken them to such beings, as we see devoid of these in the world around us. But what rational conclusion is to be drawn from this? Does he mean to infer, that, because they have neither sense, nor perception, nor memory, nor consciousness, nor judgement, that we are not to believe, what sense and reason compel us to believe? that we are to renounce our faith in the testimony of memory or experience, because there are other

beings who have no experience? If they possess no faculties similar to ours, they may have no notion of a square, or a triangle, no notion of equality and inequality; are we therefore to doubt or disbelieve, that the whole is greater than a part, or that the three angles of a triangle are equal to two right angles? Let Mr. Hume be consistent, and believe nothing, not even believing, that he does not believe.

I am not disposed, in any philosophical discussion, to appeal to rude and vulgar opinions, in opposition to clear and scientific evidence. But this is a question, which may be legitimately referred to the common understandings of mankind,—a question, which metaphysical subtlety is more calculated to perplex and obscure, than to illustrate, or to determine. I shall therefore offer no apology for stating the argument in favour of Theism, which was offered by an unlettered Greenlander to a Danish missionary. "It is true" said he, "that we were ignorant heathens, and knew little of a God, till you came. But you must not imagine, that no Greenlander

thinks of these things. A kajak (boat), with all its tackle and implements, cannot exist, but by the labour of man; and one, who does not understand it, would spoil it. But the meanest bird requires more skill to make it, than the best kajak; and no man can make a bird. There is still more skill required to make a man: by whom, then, was he made? He proceeded from his parents; they from their parents. But some must have been the first parents; whence did they proceed? Common report says, that they grew out of the earth; if so, why do not men still grow out of the earth? And whence came the earth itself? the sun, the moon, and the stars? Certainly there must be some Being, who made all these things, a Being, more wise than the wisest man."* To urge vulgar opinion in defence of any philosophical or theological tenet, is to appeal, I am aware, to an objectionable tribunal. But here it is not the opinion, but the argument, to which we would direct the reader's atten-

* Crantz's "History of Greenland."

tion. The reasoning is simple and forcible,—the conclusion natural and rational. To conduct us, indeed, to this conclusion, no dark metaphysical disquisitions, no intricate investigations, no perplexing abstractions, no subtle arguments, are necessary. The language which Nature speaks, is simple and intelligible; it is the language of her Eternal and Omnipotent Creator. It is from Nature's works, that we ascend to Nature's God.

It seems, as has been observed, an established law of human belief, operating with resistless force in every mind, that, wherever we find order and harmony existing amidst numberless possibilities of disorder and confusion, and wherever we discover, in a vast majority of instances, a concurrence of complicated means to an end, we necessarily infer intelligence and design. This is a conclusion, which no sophistry can weaken, no subtlety can subvert. It has not only all our associations respecting execution and design, all our reasonings from the character of the consequent to that of the antecedent, all

our natural and unavoidable deductions from analogy, in its favour, but is supported by the clear and indisputable evidence of mathematical probability. Its truth the Sceptic himself, in all his inferences from effects to intelligent causes, is compelled to admit. It constitutes the basis of some of his favourite hypotheses. And, though feeling the force of the argument, he endeavours to evade it, by denying its applicability to the doctrine in question, it has been shewn, that the universality of the conclusion is not to be thus limited, and that our deduction is equally just, whether drawn from the works of Nature, or the productions of human art.

We now proceed to enquire, whether the constitution of our system, and the phenomena of the universe, as far as we are capable of exploring them, furnish such examples of order, beauty, and harmony, such concurrences of means to ends, as to justify us in concluding with certainty, that they are the productions of an Intelligent and Designing Cause. And, in the prosecution of this enquiry, we are

confident it will appear, that these are so numerous, so striking, so various, and so conclusive, that, unless a man be determined to believe nothing, but what external sense can attest, he must retire from the survey of them with a full conviction, that verily there is a God, who created the universe.

CHAPTER II.

SECTION I.

"The heavens declare the glory of God, and the firmament sheweth his handy work. . . . . They have neither speech, nor language, and their voice is not heard; yet their sound has gone out through all the earth, and their report to the end of the world."

THE examples of order, beauty, and utility exhibited around us, above us, and below us, are so numerous, and so impressive, that, confined as our attention must be to the examination of a few, it becomes difficult to determine, which to select. Atheists themselves are compelled to acknowledge, that we are surrounded with wonders, which, notwithstanding, they believe, to be random productions of chance, or the results of a blind necessity. What a strange —what a lamentable inconsistency! There is not a faculty in the human mind, not an organ in our corporeal frame, not a bone, not a nerve, not a muscle,—there is not

even a bird's feather, an insect's wing, or a blade of common grass, which does not, in the most expressive language declare to every rational being, that the hand, which formed them, is Divine.

Let us first direct our attention to the starry heavens, that vast concave of surrounding orbs, moving over our heads in silent majesty, and shedding their lustre over this globe of ours in solemn grandeur. How magnificent, how sublime a spectacle! Astronomy, the noblest of all sciences, has here opened to us a field, which to explore, exalts the soul of man, lifting him above the narrow bounds of this diurnal sphere, and carrying him in imagination to worlds, and systems of worlds, stupendous in magnitude, and in number indefinite—worlds, of which many probably had being, long before our sun began his race, and many will continue to be, when he shall rise and set no more. In the boundless creation, our habitation almost disappears. What is it compared with even the planetary system? And when we extend our contemplation beyond its limits, into the regions of exterior space, and be-

hold thousands of stars, or suns, surrounded, each, we have reason to believe, with worlds like ours, we are overwhelmed and confounded. Amidst the multiplicity of orbs, circling around us, and visible to the naked eye, our globe, with "all its cloud-capp'd towers, and gorgeous palaces", seems utterly insignificant. But, how does it dwindle into nothing, when the telescope presents to us thousands of luminous bodies at immense distances, whose light would not reach us in the revolution of ages; and others beyond these, whose feeble rays, it has been computed, would occupy nearly two millions of years in travelling to our planet*. Here imagination is confounded, and the human mind essays in vain to grasp a subject, which none, but an Infinite Mind, is capable of comprehending. We withdraw from the contemplation in profound astonishment. Impressed with a deep sense of our own littleness, and the comparative insignificance of the spot of earth on which we live, we feel ourselves nothing in the immensity of the universe, and our

* "Philosophical Transactions", 1802; also "Vince's Sermons."

pride is humbled in the dust. Prostrate and self-abased, we irresistibly ejaculate, "Lord, what is man?" But we must reason, and not declaim.

We proceed then to enquire, what evidences of wisdom and design the heavenly bodies exhibit, and whether their order and harmony can be rationally referred to any other, than an Intelligent Cause. Some observations, which would here naturally present themselves, have been already anticipated, when we were examining the hypothesis, which ascribes the constitution of the universe to the revolutions of chance. A few repetitions, which may probably occur, it is hoped, that the indulgent reader will forgive.

In treating the argument, drawn from celestial phenomena, we shall confine our attention to the planetary system; and out of the multiplicity of proofs of aptitudes of means to ends, which are there exhibited, select only a few of the most simple, and the most striking.

We behold the sun, a body, which is a million times larger than our earth, placed in the centre, the source of light and heat.

Here several questions naturally offer themselves, which it is impossible to resolve, on the hypothesis of chance, or unintelligent necessity. Why is the sun a luminous body? Why is he not, like the surrounding planets, opaque? If the universe was once a chaos of floating atoms, of one and the same simple nature, and afterwards conglomerated into masses, can our adversaries name any known law, by which light and heat could be generated, and made to centre in one sphere?* Why is the sun placed in the middle, a situation the best adapted of all, for the communication of these fluids to the surrounding orbs? Why does he periodically give, and withdraw, his beams, to suit the necessities of labour and repose? Why is his distance such, that the stream of light and heat, issuing from his body, is so modified, as to be adapted to the constitution of every organic being on our planet? and that his

* To assume the nebulosity of the atoms, or that matter is essentially luminous, is a very unphilosophical, not to say, absurd hypothesis. An essential quality, in a self-existent being, is immutable, and imperishable. An atom, if essentially luminous, can never become opaque.

rays, notwithstanding their immense velocity, are infinitesimally small, so as not to injure the organ of vision? Why is he so situated, that a due equilibrium is observed, between the centripetal and centrifugal forces? Why is the earth accompanied with a satellite, which not only affords us light, in the absence of the sun, but likewise contributes essentially to our health and preservation? To the influence of the moon chiefly we are indebted for the constant agitation of the sea, which, notwithstanding its saline quality, if it were allowed to stagnate, would, by its noxious effluvia, scatter disease and death over the surface of the globe. Here we find adjustments, by which good is effected, and evil excluded, inexplicable on any other hypothesis, than of an Intelligent and Designing Cause.

We see the great luminary encircled by eleven primary and eighteen secondary planets, the latter revolving along with the former round the sun, as a common centre, and also round their respective primaries. We behold these revolutions proceeding with uninterrupted order and regularity,

from west to east, nearly all in the same direction, and all nearly in the same plane. Let the chance be calculated, that it might have been otherwise, and it may be left to any man, not blinded by invincible prejudice, or a love of paradoxical hypothesis, to decide, whether this order and regularity can be ascribed to accident. La Place, supposing only seven primary planets, and including the direction of the sun's rotation, assuming also, that there are thirty-seven revolutions in the same direction, called direct, namely, of the seven primaries in their orbits, of the eighteen secondaries in their orbits, of five primaries and six secondaries about their axis, with the rotation of Saturn's ring, computes the probability, that by chance one of these would have been retrograde, to be $\frac{1}{1374389534112}$. And, though he is hence obliged to acknowledge, that this could not possibly be the result of accident, he ascribes it to the influence of a revolving fluid*, determined, it would seem, rather

* This profound astronomer assumes, in his computation, that all the motions are direct, whereas those of the satellites of the Herschel are retrograde, and nearly per-

than admit an Intelligent Cause, to adopt a gratuitous, an unsatisfactory, and, as Vince has shewn, an untenable hypothesis. Have we any evidence of the existence of such a fluid? It is mere conjecture. And if it did exist, would not the cause of its revolution require to be unfolded? Shall we rest satisfied with a hypothetical fact, as a solution of a difficulty, which is itself as unaccountable, as the phenomenon, which it is offered to explain? Do not the uniformity of its action, the direction of its force, and the rate of its velocity, so adjusted, as to produce a beneficial effect, require a regulating power? But this is not all. It is evident, that, as the supposed fluid acts by necessity, all its motions must be in one and the same direction. Any deviation would be impossible. The reader will observe, also, that it is from the universality of the effect, that the author infers the physical necessity of the cause.

pendicular. Vince corrects this error, and adding the three newly discovered primaries, which La Place had omitted, he calculates the probability, that, out of thirty-four revolutions, if they had resulted from chance, one of them would have been retrograde, to be $\frac{1}{17179868184}$, or more than seventeen thousand millions to one.

But it is ascertained, that these motions are not all direct, and that the six satellites, already mentioned*, move in a retrograde direction. We know likewise, that the orbits of the comets are extremely diversified, these bodies traversing the heavens in all points of the compass. These are facts manifestly irreconcileable with the existence of a revolving fluid. In these revolutions, we have such regularity, as to indicate an Intelligent Cause, combined with such deviations, though few in number in the planetary motions, as to convince us, that this cause does not act by a physical necessity, but is capable of producing order and harmony by different means.

If we saw a machine so constructed, that its moving power, notwithstanding its apparent tendency, could not exceed the limit of utility, and that the evils, which, from its continued agency, we might, at first view, have reason to fear, were all excluded, we should certainly regard it, as bearing unquestionable evidence of ingenuity and design. The power of gravi-

* See the preceding note.

tation, as it is termed, sustains the planets in their revolutions round the sun; but, while they gravitate towards him, they have a tendency also, one towards another. This necessarily disturbs the regularity of their motions, changing their directions, and also the intensity of the forces*. Hence it was apprehended, by Newton, and other eminent astronomers, that by this continued, though gradual, perturbation, the whole system would ultimately be thrown into confusion. But so admirably is the law of gravitation constituted, and the several component parts of the system adjusted, that, after a deviation from any given orbit, gradually varying through a series of ages, each planet returns by a like gradual motion to that orbit, and thus is the permanence of the system, as far as gravity operates, effectually secured. And, when we attend to the concurrences necessary to effect this stability, and to produce all those benefits, which the system confers, it seems almost impossible to come to any other conclu-

* The doctrine of *forces* is here presumed. The subject has already been under our discussion. See p. 118-223.

sion, than this, that "the heavens and the earth are the work of God's hands." 1st, It is necessary, that the power of gravitation should be in the inverse duplicate ratio of the distance. Had the force of gravity varied inversely, as the cube of the distance, or in any inverse ratio, higher than the cube, the possibility of which we have a right to assume, unless we ascribe wisdom to a senseless necessity, the planets, by the smallest variation of distance from the sun, would either have receded from him for ever, or would have continually approached to him, until they were merged in his orb. 2d, It is requisite, that the revolving bodies should be small, compared with the magnitude of the central body. 3d, That they should all move nearly in the same plane. 4th, That their orbits should be nearly circular. 5th, In addition to these requisites, in order to exclude certain evils, and secure existing benefits to this planet, it was necessary, if material impulse be assumed, that the side subtending the angle formed by the line of impulsion, and a line joining the centres of the earth, and the impelling body, should be

about $\frac{1}{11}$, of the earth's diameter, measured from the centre. That any one of these concurrences should exist by accident, is contrary to all probability; that they should all be accidental, seems morally impossible.

When we survey the multiplied benefits, which we derive from the existing economy of our globe, and contemplate, at the same time, the almost infinite variety of modes, in which it might have been constituted, with the deprivations, the mischiefs, or the absolute destruction, which would have thence resulted, we find it difficult to conceive, how any rational being can resist the natural and immediate conclusion of an Intelligent and Designing Cause. Let us suppose a few possible changes, and mark the effects. Vary, for example, the distance of the earth from the solar orb, place it at the distance of Mercury, or remove it to the orbit of Saturn, other circumstances remaining the same, and the beneficial effects, which we now experience, would be converted into results instantly destructive. Vary its quantity of matter, reduce it to that of the Herschel,

or enlarge it to that of Jupiter, other circumstances continuing unchanged, and the effects would be equally fatal. Diminish the quantity of matter in the sun; let the centrifugal overpower the centripetal tendency, or conversely, augment the central body, so that the contrary effect shall follow, and our planet will either wander beyond the bounds of our system, or be absorbed in the solar mass. Vary the ratio of gravity beyond the cube inversely, (and any variety beyond this is possible,) the same destructive consequences would follow. Vary the direction of the impelling power, or the angle which it makes with the line joining the centres of the sun and earth, and a similar effect would follow. Increase the earth's rotatory motion but a little, and the torrid zone would be inundated. Increase it to a certain extent*, (and where intelligence is not present to direct and control, any extent is possible,) and the consequence would be, that every animated being would

* A rotation less than that of eighty-four minutes would produce the effect, on all loose substances in the equatorial region.

be thrown from the surface. Diminish the rotatory velocity, and the equatorial waters would quit their bed, and overflow the northern regions, occasioning, amongst a variety of other evils, one of the most fatal to which we could be exposed, a deficiency of rain and dew. Deprive it of its satellite, and we should not only lose the benefit of the tides, in a great degree; but the ocean, instead of being, as it now is, a source of numberless blessings, would become the fruitful parent of disease and death. These are to be numbered among the evils, which would have attended any other, than the existing constitution of our system.

To conclude: the earth's distance from the sun, its quantity of matter, the centrifugal force, the direction of that force, the centripetal tendency, the rotatory motion, the quantity of matter in the moon, the central position of the great luminary, and his controlling power over the whole, present such a multitude of concurrences to beneficial effects,—such a variety of adjustments one to another,—as no cause, devoid of intelligence, can possibly explain.

It is a rule, we know, with the Atheist to beg the question throughout, and to represent matter, as by necessity possessing every power, which the production of the effect seems to require, and *that* power also as by necessity so modified, that no other, than the existing phenomena, could possibly have been produced. His hypothesis, if not calculated to satisfy or enlighten the mind, possesses this peculiar advantage, that it saves him the necessity of explaining difficulties, or of reconciling inconsistencies. As he himself cannot create an atom of matter, he begins with the very modest and philosophical assumption, that what *he* cannot accomplish, no power can effect. To construct his world, therefore, he must provide materials; and he tells us, that matter has existed from all eternity. If we ask, how it is possible for him, or any human being, who is a creature of yesterday, to know this, or on what ground he can venture to advance so absurd a position, as that finite experience can prove eternal existence, we receive no other reply, than that matter exists by necessity. If we ask, how the earth was formed, he

answers, " by attraction." If we concede this power, as an existing property of matter, and enquire, how he has ascertained, that it is an innate, and not a derived property, he answers by the gratuitous assertion, that what is now, ever has been. If we enquire, how our globe was set in motion, he answers promptly, " by impulsion." If we express a desire to be favoured with the evidence of this fact, he has none to offer; but it is his hypothesis, and he would have us believe it. If we ask, how it happened, that the impelling body happened to impinge on the proper point, and with the right intensity of force, two independent, yet indispensable, concurrences, he answers, " by necessity; it could not have been otherwise." If we ask, why the earth did not, under this impelling power, move forward in a straight line, he tells us, that it was deflected by a central attractive power, existing by necessity. If we enquire, what evidence he can produce of the existence of such a power, he has none to adduce; but he assumes it. If we ask, how these powers were so admirably adjusted, he answers, " by necessity." If we

enquire, how it happened, that the light and heat of the central body are so beneficially adapted to the physical constitution of every animated being on this globe, and the support of all organic existence, we have the same short answer, " by necessity." If we enquire, how it happened, that the ratio of gravitation, to whose agency he ascribes so much, was not directly, or inversely as the distance simply, or in the reciprocal triplicate proportion, or in any still higher, which would have proved destructive to the system, he is quite prepared with the same answer, " it was so by necessity; no other ratio was possible."— Thus are we called upon to believe, in defiance of all probability, and in repugnance to all established rules of analogical reasoning, as well as those universally received principles by which we judge of antecedents from consequents, that the most astonishing arrangements, the most wonderful congruities of relation, and the most stupendous, the most beautiful, and the most useful productions, compelling the admiration even of the Atheist himself, all, all resulted from the agency of ignorance,—

from a senseless and unintelligent necessity. If the mind of any rational being has unfortunately been brought into that state, which would receive as credible such a hypothesis as this, it is really difficult to conceive any absurdity, which such a man would not believe.

Now we will not affirm, with Paley *, that attraction was originally indifferent to all

* Paley, reasoning on this subject, affirms, "that, if attraction be what Cotes, with many other Newtonians, have thought it, a primordial property of matter, not dependent upon, or not traceable to, any other material cause, then, by the very nature and definition of a primordial property, it stood indifferent to all laws." We know not, how this enlightened and ingenious philosopher would have defined a primordial property, but we apprehend, that an opponent would contend, that a primordial property, instead of being indifferent to all laws, must be its own law, and that there is an absurdity in supposing a law to be prescribed to it, when there exists no being to prescribe that law. If matter be the only self-existent, and gravitation an eternal property of matter, that property must, in its nature, be definite, and insusceptible of modification. But it may be pertinently and emphatically asked, if it be credible that the property should, by a blind necessity, be such, out of numberless conceivable varieties, as to produce all those beneficial and astonishing results, which we behold in every department of nature?

laws, because we know, that, how improbable soever may be the hypothesis of the Atheist, he would here meet us with the assumption, that matter is eternal, and that its properties, with their existing modifications, are eternal and unalterable; but we affirm, that it is marvellous beyond all credibility, that the ratio of gravitation, other ratios being conceivable, and therefore not in themselves impossible, should, by a blind fatality, be precisely that, which is productive of order, harmony, and utility, correcting its own tendency to derange the system, effecting good, and excluding evil, —just that ratio, and no other, which an intelligent and provident being would ordain. Wisdom and design are not objects of perception, nor can we have any evidence of their existence, but striking aptitudes of concurrent means to ends. If brute matter be capable of producing all the effects of intelligence, one or other of these conclusions must follow, either that brute matter is intelligent,—but this position involves a contradiction,—or that intelligence is not necessary to produce that,

which, consistently with all our established rules of judging, nothing but intelligence can accomplish.

It would be easy to adduce many more facts, drawn from the construction of the planetary system, evincing congruities and adjustments, irreconcileable with chance, and inexplicable on any other supposition than that of a Wise and Designing Author*. But let us descend from superior

* There is a phenomenon in the planetary system, which, though not visible to the naked eye, is at once stupendous and magnificent, and which merits attention, as offering a striking indication of an Omnipotent and Intelligent Architect,—we mean, the two rings of Saturn. These rings are concentric, and each is composed of parts, which, as far as can be ascertained, are loose and incoherent. The outside diameter of the larger ring is about 200,000 miles; and a point on its surface moves with the prodigious velocity of 1000 miles a minute. The inner diameter of the smaller circle is about 145,000 miles; and the space between the rings nearly 3000 miles. The construction of these, and the stability of their form, have been pronounced, by an eminent astronomer, to be wholly inexplicable on any known physical principles. "Give", says Mr. Vince, "existence to matter, give it gravitation, give it motion, give it whatever you please, and you may defy infidelity to give an account, how the rings could possibly have been formed."—(*Vince's Sermons*, p. 129.) These astonishing structures are of an irregular figure;

worlds, and direct our attention to phenomena more accessible to close and minute examination. On our own planet, we shall

and La Place has shewn, that, were it not for this irregularity, they could not have retained their position, but must have fallen on the planet. He has shewn, also, that the oblate form of Saturn is essential to their stability, the redundancy of his equator, and the flatness of the rings, mutually so corresponding by reciprocal gravitation, that the motions are precisely adjusted. Here we have irregularity, where irregularity is necessary, which furnishes one of the strongest evidences of intelligence; and we have an aptitude of form, under the agency of a general law, to a beneficial effect. That such concurrences should result from a blind impulse, or a senseless fatality, is improbable in the extreme.

Robison, who questions the truth of La Place's hypothesis, conceives, that the parts may possibly cohere; and conjectures, that they are composed of a viscid substance, projected from Saturn's equator. Herschel, on the contrary, infers from observation, that the matter of the rings is no less solid and substantial, than the planet itself. But, if it were certain, that the rings were instantaneously formed by projection, their gradual formation being physically impossible, and that the phenomenon is resolvable into centrifugal and centripetal forces, the question would still be, not what were the immediate causes, but what was the primary cause, and whether unintelligent matter, under the influence of unintelligent power, could produce structures so stupendous, so stable, yet composed of parts apparently incoherent, whose very irregularity is indispensable to the preservation of their form,—structures,

find in ourselves, and every thing around us, such admirable arrangements, such apt and harmonious relations, such complicated and beneficial concurrences of certain causes to certain effects, and these concurrences so various and so multiplied, that it becomes a matter of profound astonishment, that any mind should be so darkened by metaphysical sophistry, so blindly attached to extravagant hypothesis, or so stupified by professional habits, as not to discern the ordinations of wisdom and design pervading the whole.

SECTION II.

THE earth is the abode of innumerable living beings. Let us take a general and cursory view of the modes in which they are produced, and the means by which they are sustained. If we first direct our attention to the means of their production,

displaying combinations and aptitudes in respect to gravity, rotation, position, and velocity, all necessary to their formation, and their permanency.

we shall find variety and uniformity most wonderfully combined.

Though there is one general law, by which the *ovum*, containing the embryo of the future animal, is fecundated by the male, and after a certain period, varying in different species, is matured, and excluded by the female, the varieties which obtain in other respects, suited to the nature of each species, and of the element in which they are placed, exhibit most striking examples of aptitudes of means to ends. Necessity, which implies the absence of skill and contrivance, and is incapable of accommodating itself to varying circumstances, or of adjusting new relations, acts without plan, and without variation. To adapt means to ends is the peculiar characteristic of intelligence. If necessity be the sole agent, if an abstract name can be supposed to act, or if chance, and not design, presided at the formation of animal organisms, we might pertinently ask, whence life originated. That this principle was not coeval with the existence of our globe, seems abundantly evident; and no hypothesis, which Atheism has yet pro-

posed, can account for its introduction. But we shall waive this question, and merely ask, how such astonishing congruities, such wonderful adjustments in the existing relations, as are indispensable to the production of animal organisms, can be reconcileable with any cause devoid of intelligence? and whence it is, that in cases precisely similar, the uniformity of necessity does not obtain, the same end being effected by different means? Let us attend to a few of these diversities.

It is a general rule, for example, that fresh-water fish, which are cold-blooded animals, and live in a temperature incapable of hatching their young, unable, also, of themselves to supply warmth for that purpose, carry their eggs to the water on the shore, where the temperature is higher, and where not only are the young hatched, but are also supplied with food in the numerous insects, which frequent the banks. If this were the result of blind necessity, we should observe the same rule obtain in all animals of the same kind, and placed in the same circumstances. Yet we find the crocodile, a cold-blooded animal, car-

rying her eggs to the shore, not however leaving them in the water, according to the general practice of cold-blooded animals, but carefully burying them in the warm sand. In both cases is the end effected, but by different means.

Marine fishes are also generally cold-blooded, and therefore incapable of hatching their eggs. They are likewise at too great distance from the land, to be able to transport the *ova* thither, and thus to avail themselves of its higher temperature. But the purpose of generation is not therefore defeated. A provision is made for the preservation of the embryo, and the production of the animal. Their eggs, as soon as excluded, float on the surface of the sea, and thus placed in a temperature more congenial to their nature, are there hatched among the *fucus*, in which they are embedded *.

The cetaceous tribe, on the contrary, are warm-blooded. The temperature, therefore, of their own bodies, suffices to

* Cheyne's "Philosophical Principles of Natural and Revealed Religion."

foster the embryos, and they bring forth living animals. Gestation is the general law in quadrupeds, and also in the human species. The *uterus* is so contrived, as, during a state of pregnancy, to be little or no inconvenience. Birds, on the contrary, who have to seek their food by flying from place to place, and to whom gestation would be a burthen, bring forth eggs, which the female hatches by incubation. There are a few exceptions, in which the young are hatched by solar heat.

It would be tedious, as it is unnecessary, to enter into farther details. These varieties furnish evidence of intelligence and wisdom. They clearly prove, that, while blind necessity proceeds by one unvarying rule, incapable of either intention or foresight; intelligence, on the contrary, can deviate from the usual course, can accommodate its operations to diversity of circumstances, and accomplish the same ends by a variety of means. It is vain to urge, that, if these things were not so, many of the species would perish, and that none would exist, but where accident has produced these favourable concurrences. It may, with

equal pertinence, be argued, that, if the wheels of a clock were not properly formed, and duly adjusted, the machine would have no existence. But the question is, How came they to be so adjusted? Did chance execute, in a thousand instances, what is hardly within the range of possibility in one? Shall we be told, that hundreds of species have perished, and those only have survived, in which these fortunate circumstances have concurred? This is mere assertion, unsupported by a tittle of evidence. That various species of animals have become extinct, is proved by facts; but we have every reason to believe, that these perished, not by reason of no provision being made for continuing the existence of the species, but by one or other of those tremendous convulsions, with which our globe seems to have been visited.

Let us now direct our attention to the process, which intervenes between the period of fecundation, and that of exclusion. With this view, we shall select an example from oviparous animals; and none, perhaps, can better answer our purpose, or

more clearly illustrate the wisdom of the Creator, than that of the common hen. In her the whole process has been assiduously watched, and minutely observed; nor can the developement of it fail to excite admiration. The detail which is here presented, will be found in Sturm's "Reflections," a work, which cannot be too earnestly recommended to the attentive perusal of every young enquirer into the works of God. Nieuwentyt is more copious, but to common readers less intelligible.

Every egg, almost immediately after impregnation, discovers a small speck on the yolk, which is called the cicatrice. In the centre of this appears a white circle, in the middle of which is a fluid matter, in which the embryo of the chick is observed to swim. In the extremity of the embryo is contained a bag, surrounded with a ligament, and in this the navel afterwards appears. This is all, that can be observed, before incubation takes place. When the hen has sitten about twelve hours, some lineaments of the body appear. A humid matter is perceived, having the form of a small head, on which vesicles are seen, that

afterwards form the vertebræ of the back. In thirty hours the eyes begin to be distinguishable. At the end of the second day, the heart begins to beat, and has the form of a horse-shoe; but no blood is yet seen. "We discover, at the end of about 48 hours, two vesicles with blood, the pulsation of which is very evident. One of these is the left ventricle, the other is the root of the great artery. One auricle of the heart appears at the 50th hour, which resembles a lace folded back upon itself. The beating of the heart may now be observed in the auricle, and afterwards in the ventricle. At the end of seventy hours, the two wings may be distinguished, and on the head two knobs for the brain, one for the bill, and two others for the fore and hind part of the head. Towards the end of the 4th day, the two auricles, now visible, approach nearer to the heart than before. The first auricle that appears, seems to have two horns; but it afterwards appears to be auricles. About the 5th day, the liver is seen. The first voluntary motion is observed at the end of 131 hours. At the end of 138 hours, the lungs and stomach become visi-

ble; and at the end of 142, the intestines, the loins, and the upper jaw. At the end of 144 hours, two ventricles may be discovered, and two drops of blood instead of one, which was seen at first. On the 7th day, the brain acquires some consistence. At the 190th hour of incubation the bill opens, and the flesh appears on the breast. At the 194th hour, the *sternum* (i. e. the breast-bone) is seen. About the 220th hour, the ribs come out of the back; the bile and the gall bladder become visible. After the 236th hour, the bile becomes green; and if the chick be taken from the integuments, it can evidently move itself. The feathers begin to shoot towards the 240th hour, and the skull becomes gristly. At the 246th hour, the eyes appear, and the ribs are perfect at the 331st hour. At the end of 355 hours, the beak opens and shuts; and about the 18th day, the chick utters its first cry. Its strength then gradually increases, till it sets itself at liberty, by breaking the prison in which it was confined."

Is it possible to contemplate this wonderful process, without profound admiration? Can we trace it, step by step, from

its commencement to its completion, and not acknowledge the hand of intelligence and wisdom? That it can be the result of chance is demonstrably repugnant to all probability; and to attribute it to necessity, or unintelligent power, is to abandon the fundamental principle, on which we infer the nature of a cause from the character of its effect, and to contradict the universally acknowledged connection between intellectual qualities, and their visible results. That the several changes arise successively from immediate and necessary causes, is granted, each antecedent change necessarily introducing its consequent; but that the properties or powers, acting without intelligence, should be the sole or ultimate cause, is a notion, which the mind instantaneously rejects, as utterly incredible. If we saw a shapeless lump of wood, placed on the ground, and drawn by a tackle, so as to be placed under the operation of a machine, and then mechanically carried from one part of it to another, until it came out a perfect ship-block, we might with strict propriety, when explaining the mechanical process, ascribe the

operation to the brute agency of necessary causes, the ropes, the pulleys, the cranks, the saws, the chisels, the wimbles; but the ingenuity displayed in the application and management of these causes, would irresistibly lead to the conviction, that their immediate, though necessary agency, was ultimately referable to intelligence and design. The regularity and uniformity, with which the animal process in the egg is commenced and completed, may prove, that a connection is established between certain antecedents and certain consequents; but when we consider, that in the whole of this process there is nothing superfluous, nothing defective, and that it is the characteristic, not of ignorance, but of wisdom, to do nothing in vain, we cannot, without incurring the charge of gross inconsistency, attribute the establishment of this connection, to any, but an Intelligent Cause. If this single example of animal production, truly curious and wonderful, is not sufficient to evince wisdom and design, if there be any mind, so constituted by nature, or formed by habit, as to resist this evidence, it may be deemed folly to offer any other

example*. But, as our mental habits and associations are diversified in endless

* The indulgent reader will perhaps excuse me, if I select, from the insect tribe, another instance of production, which, while it differs materially from the one here adduced, presents a striking evidence of wisdom and design. It is taken from Kirby and Spence's Entomology, a work replete with curious and useful information. The larvæ of the gad-fly, or horse-bee, are destined to live in the stomach of a horse. "How shall the parent, a two-winged fly, convey them thither? By a mode truly extraordinary. Flying round the animal, she curiously poises her body for an instant, while she glues a single egg to one of the hairs of his skin, and repeats this process, until she has fixed in a similar way many hundred eggs. These, after a few days, on the application of the slightest moisture, attended by warmth, hatch into little grubs. Whenever, therefore, the horse chances to lick any part of his body, to which they are attached, the moisture of the tongue discloses one or more grubs, which, adhering to it by means of the saliva, are conveyed into the mouth, and thence find their way into the stomach. But here a question occurs to you. It is but a small portion of the horse's body, which he can reach with his tongue; what, you ask, becomes of the eggs deposited on other parts? I will tell you, how the gad-fly avoids this dilemma: and I will then ask you, if she does not discover a provident fore-thought, a depth of instinct, which almost casts into the shade the boasted reason of man. She places her eggs only on those parts of the skin, which the horse is able to reach with his tongue; nay, she confines them almost exclusively to the knee, or the

variety, and as it is therefore useful to address different arguments, and different illustrations, to different minds, we shall proceed next to consider the means, by which animals, and other organised beings are preserved in existence.

On examining the structure of every animal, from the meanest insect to the complicated organization of man, we are struck with astonishment at the curious construction of the parts severally, their wonderful aptitude for performing their respective functions, their intimate relations and dependencies, their common co-operation for the production of one effect, and their harmonious union in one compact whole. But curious and wonderful as the organization is of every animal, and admirably adapted as it is, for the purposes of life and action, this organization would be vain and fruitless, if no provision were made for sustain-

shoulder, which he is sure to lick. What could the most refined reason, the most precise adaptation of means to an end do more?" (Vol. i. p. 339.) Can this wonderful instinct be the result of chance? Is it not the wisdom of a Superior Power, directing and governing the actions of this insect?

ing it in existence. The animal must live and be supported. No sooner, therefore, is it excluded from the source of nourishment, by which the embryo was fostered to its birth, than another provision is made for its sustenance. When one supply is cut off, another is immediately furnished. But the animal knows not, that food is necessary; nor, if it were aware of the necessity, would it know, where to find, or be able to procure, the nutriment required. Its provision singly would not suffice. Something more is requisite, and that something is supplied in the instinct of the young impelling it to take, and of the parent to administer, the food prepared. The child seizes the breast, and the lamb the teat, soon after birth. Here is a mutual relation of two independent circumstances, which cannot rationally be ascribed to chance. If the aliment were wanting, the instinct would be useless; and, if the latter were absent, the former, though provided, would be provided in vain. But to this subject we shall have occasion to return, when we come to examine animal instincts; dismissing it, therefore, for the present, we shall direct

our chief attention to the general means provided for the support of all organic existence. The primary requisites for this purpose, are air, food, and water, all equally indispensable, not only to the animal, but the vegetable creation.

The first of these, namely, the atmosphere, merits our particular attention. Its necessity, its composition, its subserviency to various purposes, and the mode in which it is supplied, all furnish the most impressive evidence of adaptation of means to ends, and therefore evince the agency of an intelligent and designing Power. The necessity of this vivifying fluid is a fact too well known, to require either proof, or illustration. It constitutes one of the mainsprings of vegetable and animal life. We may exist for some days without food; but deprive us of this salutary fluid, and we cease to breathe; we instantly perish. Had men sprung from the earth, like mushrooms, as the Epicureans supposed, and had an atmosphere been wanting, they would have returned immediately to the dust, from which they came. If they could have lived for a moment, it would have been in

the same moment to die. An atmosphere then is necessary, and an atmosphere surrounds us. And, when we consider, how admirably this fluid, and the organs of respiration, are mutually adapted, and their common subserviency to the purposes of life, health, and enjoyment, we perceive the concurrence of two causes to a beneficial effect, wholly independent on each other, which the hypothesis, neither of chance, nor of necessity, can rationally explain.

But, if it be the characteristic of wisdom to adapt means to useful ends, it furnishes an evidence of still higher wisdom, when we perceive these means rendered instrumental, at the same time, in accomplishing a variety of other important purposes. To the atmosphere we are indebted partly for the sense of hearing. It is by the pulsations of the air, occasioned by the vibrations of sonorous bodies, and by these pulsations affecting the drum of the ear, and thence communicated to the auditory nerves, that we become sensible of sounds, and noises. Were this salutary fluid wanting, the auditory organ, and the curious and complicated mechanism, displayed in its

construction, would exhibit a resemblance to a useless musical instrument, ingeniously constructed, but with no provision made for drawing forth its powers. Without an atmosphere, we should be as deaf men. To how many perils—to how many accidents and disasters should we then be exposed, from which the sense of hearing, by apprising us of danger, now serves to protect us! What a fruitful source of pleasure and instruction, what a fund of social delight and mental improvement would be cut off, were we deprived of this invaluable sense, to the existence of which the atmosphere, and the auditory organs, are equally indispensable! Here is another aptitude no less wonderful, than useful. And, when we examine the curious construction of the ear, and see how admirably it is fitted for receiving and propagating the pulsations of the air to the auditory nerves, the conclusion seems irresistible, that none but an Intelligent Cause can account for its formation.

Again.—This invaluable fluid enlarges the sense of sight. If we had no atmosphere to reflect the sun's rays every where

around us, we should see things by reflected light; but it would be, as we now see an illuminated object, surrounded by the blackest night, and the sun himself would appear like a blazing orb, in an expanse of darkness. The inconveniences and deprivations of such a condition, we need not point out.

Without an atmosphere, and its refractive power, we should have neither dawn nor twilight. In the morning the glare of the sun would burst upon us instantaneously, and his equally sudden disappearance in the evening would leave us, if he happened to be obscured by clouds, without any previous intimation, in total darkness. Can the exclusion of such inconveniences be the result of chance? or can the reflecting and refracting property of the atmosphere, so beneficially adapted to our accommodation, be ascribed to any other than a Designing Cause?

While the atmosphere is necessary to hearing, and enlarges the sense of sight, it contributes also to the sense of smell. By the effluvia, which issue from many surrounding substances, and which are con-

veyed by it to the olfactory nerves, we become sensible of those objects, which it may be necessary to avoid, and are informed of the presence of those, which it may be desirable to procure. How many noxious and offensive substances are we thus warned to reject as food? How often may we be thus taught to escape from causes of infection, disease, and death? How necessary is it to many of the brute creation, which have no other means of distinguishing, than by smell, what is wholesome from what is noxious?

Again.—The atmosphere is the medium, by which winged animals are enabled to flit, or journey, from place to place in quest of food and shelter. Its tenuity and density are mutually so adjusted, as not to prevent their flight, while it supports their weight; and their structure is wonderfully adapted to the element, in which they fly. When we consider the various densities, of which the fluid and the animal are susceptible, and of which they might have been constituted, we can, with no probability, refer their mutual congruity to an unintelligent cause.

But there is another important property, in the nature of this fluid, which possesses a peculiar claim to our attention. It has just now been remarked, that the atmosphere, in order to sustain winged animals in their flight, must have density, or weight. Now, it is ascertained by every common barometer, that the atmospheric pressure on every square inch is equal to that of fifteen pounds; the weight, therefore, which a human body of ordinary size has continually to sustain, is computed to be more than thirty thousand pounds, or nearly fourteen tons. A weight so prodigious, unless counteracted, would instantly crush the human frame. Its force would be irresistible; nor could the ingenuity of man devise any means of protection, against its power. If, then, in all works of human art, it is deemed an evidence of foresight and skill, to confine the operation of a cause, within the limit of utility, by opposing to it the agency of another cause, it presents a still more impressive evidence of providence and wisdom, when we find a cause so constituted, as to control its own injurious tendency by its own intrinsic

power. That evidence, then, we have exhibited here. So wisely and beneficially is our atmosphere contrived, that a very inconsiderable portion of it suffices to preserve the equilibrium, and to furnish a counterpoise to the pressure of the whole. Hence the weight of the external air, tremendous as it must be owned to be, is completely counteracted by the reaction of the small quantity of the elastic fluid within us, and thus is the human frame preserved from instant, and otherwise inevitable, destruction*. To every unprejudiced and unsophisticated mind, it must be unnecessary to point to the conclusion, to which this wonderful provision for our safety irresistibly leads us. And this conclusion is strengthened, by the fact, that atmospheric pressure, from which we should naturally anticipate immediate death, is indispensably necessary to our health and comfort. For it is known, by experience, that, if we ascend to great heights, where the pressure is diminished, instead of feeling more

* Fluids press equally in all directions; hence the atmosphere does not disturb the relative position of the fibres of the body.

easy, by being partly relieved from the prodigious weight, we find, that, the due balance being destroyed between the external and internal air, painful sensations immediately ensue, accompanied sometimes with bleeding at the nose, spitting of blood, drowsiness, and apathy. Can any probable reason be assigned, but the interposition of intelligence and design, why this is not the state of the atmosphere, which we have constantly to breathe; or why the density and elasticity of the air, in which we live, are so accordant with the constitution of our frame?

Again.—If we descend into the waters, we find the atmosphere contributing to the sustenance of the finny tribe. By the contractions and dilatations of the air bladder, occasionally supplied with air from the surface of the water, they are enabled to increase or diminish their density, and thus either to rest in the water, or to ascend and descend in quest of food.

Nor is it to the purposes of animal life only, that the atmosphere is subservient: it is necessary to vegetation. Carbonic acid gas, one of its noxious ingredients,

furnishes plants, which appropriate it by absorption, with part of their aliment. Air, in fact, constitutes a considerable portion of their substance. And, while the atmosphere thus essentially contributes to the maintenance of animal and vegetable life, it serves as a mantle or covering to the globe itself; for, being a slow conductor of caloric, it prevents the heat from escaping too rapidly, and in this respect, also, contributes to the comfort of the animal, and the growth of the vegetable, tribes. But space would fail us to enumerate the various purposes, to which the atmosphere is subservient; and were we to specify all, which have already been discovered, many would remain unnoticed, which the ingenuity of man has not yet been able to discover. There is one more, however, of its most important uses, to which we shall have occasion to advert, when we examine the process, by which rain is produced.

Let us now, for a moment, direct our attention to the composition of the atmosphere. It consists of two elastic fluids, or gases, oxygen and nitrogen, with a small portion of what is termed carbon. In a

separate state, the former of these fluids is found to be immediately detrimental, and ultimately fatal to human life *. The latter is singly equally destructive. It is their combination, which renders them innocuous and beneficial. In the composition of our atmosphere, the proportion of the former to that of the latter is as 21 to 79, just that ratio which is salutary to the human constitution, neither consuming life with rapidity, nor deadening its energies by languid circulation, and depression of spirits. Out of the indefinite number of other proportions, in which these two gases might have been combined, all more or less deleterious, how comes it that not one of these is the existing proportion? Why are they all excluded? If we found two deadly ingredients chemically so united as to become not only harmless, but salutary, we should, without hesitation, infer the

* Lavoisier proved by experiment, that pure air, or oxygen gas, if respired for a certain time, by furnishing too great a quantity of caloric, rarifies the blood too much, and increases the rapidity of the circulation, the necessary effects of which are violent fever, and inflammation of the lungs.

intention and the skill of the compounder. A view of the numerous contrary possibilities would render this inference almost irresistible. Why a similar conclusion should not be drawn here, it is impossible to offer any rational explanation.

But this fluid, so indispensable to vitality, is in a state of continual consumption, by animal respiration, as well as by other causes, and, without an uninterrupted and adequate supply, would soon be exhausted, and every organic being would perish. Let us take a cursory view of the means, by which this constant supply is effected.

The atmosphere, as has been observed, consists of two gases, oxygen and nitrogen, with a small quantity of carbon. The former of these gases we consume by respiration. It is taken in by the lungs, mixes with the blood, and, in the opinion of some physiologists, contributes to its fluidity. After exhalation, it may be again once or twice inspired, without material injury or inconvenience; but it then becomes so vitiated, in its passage through the lungs, by its combination with carbon, forming carbonic acid gas, that it cannot be inhaled

without producing instantaneous death *. Thus the oxygen, or vital part of the atmosphere, is incessantly consuming, or rather corrupting, and, were no means provided for its purification, or for a fresh supply, would in time be either exhausted, or so vitiated, as to destroy every animal being. The exclusion of this evil indicates design; and, what particularly deserves attention, is the fact, that the just proportion is uniformly maintained, and that in the open fields, in the crowded city, and in the popular assembly, the two important gases are found to exist in nearly the same ratio †.

But, if the supply of vital air warrants the conclusion of intelligence and design, the manner in which, we have rea-

* The effect of this gas on respiration is sensibly felt by those, who are in the habit of drinking fluids in which it is present, as *soda water*, in a state of effervescence.

† It has been observed, that the proportion of oxygen to nitrogen has been found to be nearly the same, not only in the open country, but in crowded theatres. Various experiments lead to this conclusion. In certain situations, however, there are numerous other substances, which are either mechanically or chemically present in it,

son to believe, that the supply is effected, contributes powerfully to corroborate that conclusion. For it would seem, that, while animals are exhausting, or corrupting, this vital principle, while every fire and every candle are consuming it, the vegetable world, under the influence of solar heat, is daily furnishing a fresh supply, pouring it into the atmosphere in abundance, and due proportion. And, what still further manifests the provisions of wisdom, in educing a double benefit from one and the same source, it would seem, that plants absorb and decompose carbonic acid gas; and that, while they retain the carbon, as favourable at least, if not absolutely necessary, to vegetation, they return the oxygen in its pure state to the atmosphere; restoring what is salutary, and reserving what is noxious *. Can this unintermitted reciprocation of benefits, essential to the life of plants and animals, be

and which render it detrimental to health. Vapour, at all times, constitutes a part of the atmosphere, in the proportion of about one per cent.

* When we consider, how destructive the carbonic acid

the effect of random chance, or a senseless necessity?

Air, however, with all its salutary qualities, would stagnate and become unwholesome, if it were allowed to continue in a state of quiescence. Motion is necessary to its salubrity. Possessing, accordingly, the properties of gravity and elasticity, with a susceptibility of rarefaction by heat, and

gas, if not limited, would be to human life †, and the immense quantities which are generated by the respiration of animals, to say nothing of combustion, and other causes, we should naturally apprehend, that this acid would soon be increased to such a degree, as would prove fatal to our existence; and, were there no counteracting cause, this indeed would be the inevitable result. The exclusion of the evil evinces design. The gas, when it escapes with the breath, being mixed with caloric, is specifically lighter than air, and instantly ascends into the atmosphere; hence we are protected against the injurious effects of a repeated inhalation. Vegetables attract it, and entering into them, it is there decomposed, they retaining the carbon, and restoring the oxygen in its pure state to the atmosphere. By this salutary process, the necessary equilibrium between the oxygen and nitrogen gases is constantly preserved.

† The carbonic acid gas constitutes only about .01 of the atmosphere; were it .1, it would prove fatal to animal existence. See Thomson's "Chemistry."

condensation by cold, it can never remain long in that state of stagnation, which is occasioned by an equilibrium of those operating causes, by which it is constantly liable to be agitated. Its increased or diminished density, its greater or less elasticity, as it happens to be affected by cold or heat, will destroy the equilibrium, and produce wind, or a transition of the fluid from one place to another, with more or less velocity; and thus is the salubrity of the atmosphere preserved. And here we would remark, in passing, that the polar regions, covered with ice and snow, which, on a superficial view, might be pronounced to be an evil, redeemed by no possible benefit, contribute materially to the wholesomeness of the atmosphere, and the comfort of a considerable portion of the species. The dense cold air, rushing forward from the two poles, to restore the equilibrium between it and the rarer equatorial fluid, not only serves to attemper the excessive heat of the torrid zone, but, by the agitation of the atmosphere, contributes also essentially to its salubrity. Thus is provi-

sion made for constant supplies of this invaluable fluid, and for preserving it in a state adapted to the life, health, and growth of plants and animals.

Let us now, confining our attention to the subject before us, contemplate for a moment the evils, which would have existed either partially or wholly, if intelligence had not presided at the constitution of our globe. There might have been no atmosphere, in which case, no organic being, animal or vegetable, could have been produced, and live. The moon has no atmosphere; our earth might have been in the same condition; and, instead of being covered with plants and animals, might have remained for ever a barren waste. The atmosphere might have been constituted of ingredients either useless, or, in every possible combination, deleterious; or if salutary in a certain ratio, its component parts might have been united, in a thousand other proportions, all either detrimental, or destructive. If aptly composed, there might have been no provision against its gradual exhaustion; or

the supply might have been inadequate to the incessant consumption. If duly constituted at its formation, the proportion of its component parts might have been disturbed or destroyed, by the commixture of effluvia, of which it is susceptible. It might have remained in a stagnant state, a source of pestilence, and universal death. It might have been an unelastic fluid, and crushed us to pieces. These are possible evils; and one or more of them must, in all probability, have existed, if this system of ours had originated in the agency of unintelligent matter. The exclusion of these, with the introduction of their salutary contraries, furnish ample evidence of that wisdom, which, while it adapts causes to effects, and means to ends, provides also for the regular supply of the means required.

In conclusion, we shall briefly enumerate the principal requisites in the constitution of the atmosphere, comprehending those, which we have already specified. 1st, It must have gravity. 2d, Elasticity. 3d, The elasticity must be perfect*. 4th, The elas-

* Chaptal's Chemistry.

ticity must be unalterable. 5th, The atmosphere must be invisible. 6th, It must be compressible. 7th, Incondensible by any cold into a liquid state. 8th, The two gases, of which it is composed, must constantly bear the same ratio to each other. 9th, There must be a continual supply, in other words, what is vitiated by respiration, and other causes, must be purified and restored. 10th, It must be universally present. That all these qualities should concur in the constitution of this fluid, by unintelligent agency, is morally impossible. The absence of any one of them would impair its utility, if not render it destructive to all vital existence.

The next requisite to the support of vegetable and animal life, to which we would direct the attention of the reader, is water. On the superlative utility, or, we should rather say, the absolute necessity, of this element, as it is commonly termed, it would be superfluous to expatiate. Without a regular and ample supply of this useful fluid, plants and animals would perish, and all that curious and wonderful organic apparatus, by which they are fitted

to live and grow, would be nothing but a vain and useless exhibition. Here two particulars forcibly claim our attention, 1st, The abundance of the supply; and, 2d, The astonishing process by which it is provided.

It has been ascertained, that the water on the surface of the earth exceeds the superficial measure of the land, in the proportion nearly of two to one. A mind, disposed hastily to condemn, as an error, or an evil, whatever accords not with its conceptions of right and wrong, might imagine this to be a defect in the constitution of this globe. It might pronounce such an expanse of ocean to be, if not a waste, a misappropriation, at least, of a large space, which might have been usefully occupied, as the habitation of men. In answer, we shall say nothing of the millions of animated beings, that subsist in its bosom; but it is important to observe, that the extent of its surface has been demonstrated, by the most conclusive evidence, to be no larger, than is sufficient to furnish the earth with the necessary supplies of

dew, rain, and water *. The process, by which these supplies are furnished, comprises such an admirable concurrence of means to ends, such a regular series of causes and effects, every one of which is essential to the result, as forcibly to impress the conviction, that such a chain of congruities could not possibly originate in any other, than an Intelligent Cause. We proceed briefly to detail the process.

* The Atheist asks, why our earth, and its organic beings are not so constituted, as to supersede the necessity of such extensive means of supplying water. He asks, could not another mode, more compatible with a larger field for human population, have been contrived? With equal propriety, he might enquire, why our planet is not as large as Jupiter, or why the solar system does not contain ten times the existing number of planetary bodies. He demands inconsistencies. What is infinite exceeds his comprehension; and if it be finite, he is dissatisfied. No possible arrangement, in a finite system, could preclude such useless and absurd enquiries. But the question here is not, whether the means, by which we are supplied with water, be the best, or not, according to our apprehension; but simply, whether they do not furnish incontestable evidence of a Designing Power. It is not a question of the degree of intelligence, but of the attribute simply.

For the production of rain, a fluid must be provided, and, in the sea, we have a large body of water for that purpose. Here we have an instance of an indispensable benefit effected, and an evil, at the same time, excluded, which merits our attention. Water, if fresh, and allowed to stagnate, soon becomes putrid. A certain degree of agitation is required, to preserve it in a wholesome state. A surface of the fresh element, so extensive as the ocean, if permitted to lie motionless, would shortly be reduced to a state of corruption, and prove destructive to the whole human race, if not also to every living thing. The fish would perish, and floating on the surface, their pestilential effluvia would overspread the globe, and scatter around us disease and death. But the wisdom of a Provident Cause is here manifest, in rendering a law, while it is subservient to various other salutary purposes, in this case also beneficial. The water gravitates towards the sun and moon *, and being thus elevated

* The influence of the sun, in raising the tides, is small in comparison with that of the moon, the earth's

above its ordinary level, twice in nearly every twenty-four hours, is constantly, though exposed to impediments in its course, rolling from east to west, and producing the tides. This periodical motion of the water precludes this destruction, which would otherwise ensue. There is also another, though but partial, preventive of this desolation. Salt, we know, has an antiseptic property, and with this substance the water of the ocean is impregnated; hence its tendency to putrescence is considerably diminished.

Here then we have the agitation of the sea, and its saline quality, two circumstances completely independent on each other, concurring to the exclusion of an evil, fatal in its effects, and which no human wisdom could either alleviate, or remove. Our adversaries, we are aware, are ready to offer their immediate causes, as an explanation of the facts. They refer the motion to gravity, and the saline quality of

diameter bearing a considerable proportion to its distance from the satellite, and being almost nothing, compared to its distance from the sun.

the ocean to immense beds of salt at its bottom, and on its shores; but we reclaim against this short-sighted philosophy. Be it granted, that the physical causes can account for the effects*; the existence of the

* By this concession, we would not be understood, as assenting to this explanation of the fact. The hypothesis is opposed by a difficulty, which appears to us to be insuperable. It is the general opinion of physiologists, that few, if any, marine plants or animals, will live in fresh water, unless for a very short time, and that far the greater number die, when removed from their natural element. How then was it possible for these plants and animals to live in the sea, before it gained its saline quality, a process, which it must have required many centuries to complete? The only rational hypothesis seems to be, that the element, in its present state, and its inhabitants, were simultaneous productions, or that the former was provided, as an abode, for the latter. It is likewise to be observed, that the hypothesis, if granted, is clearly irreconcileable with the eternity *ab ante*, and the eternity *ad post*, of marine plants and animals. These, it is known, cannot live in water completely saturated with salt. But, if the process of saturation has been going on from eternity, it must have been completed many centuries ago, and every marine organism must have perished. Their existence contradicts their eternity *ab ante*. It is equally clear, that, if the process of saturation be now advancing, by means of these beds of salt, to which the saline quality of the water is attributed, it must, in

causes, and the salutary effects, indicate design. The presence of caloric explains the formation of steam in an engine; but, why is it present? This is the question. Can any senseless cause account for the fact? We should not estimate very highly that man's judgement, who, perceiving water issuing from a bed of sand, charcoal, and sponge, should conceive, that he had assigned all the necessary causes of the purification of the fluid, when he ascribed it to the operation of these three substances. Their presence, indeed, accounts for the effect; but the enquiry would be, why are they present? What produced the rare, and beneficial combination? When an evil is averted, or a benefit effected by two, or more, concurrent circumstances, entirely unconnected one with another, the rational conclusion surely is, that they are the contrivance of wisdom and design, and not the effects of ignorance, or of accident.

the revolution of ages, be completed, and every marine plant and animal cease to exist. Their eternity *ad post*, therefore, seems equally impossible.

The fluid being provided, and its noxious tendency being, by its agitation, and saline quality precluded, the next enquiry is, how is this fluid to be distributed over the surface of the earth, for the necessities of the animal and the vegetable creations. Here again we have an evidence of wisdom and economy, in rendering one and the same cause effective of a variety of beneficial results. The sun, to which we are indebted for so many invaluable and indispensable benefits, performs here an important office. It is a property of water to be evaporated by heat. The sea presenting a large surface of this fluid to the influence of the sun's rays, evaporation consequently takes place, and this process, by the continued agency of the solar heat, is uninterruptedly going on. The vapour, thus generated, and happily for us so attenuated as to be invisible to the eye, and not injurious to the human frame, by abstracting from our bodies too much caloric, ascends by its specific levity into the atmosphere. Here it remains, sometimes in a state of perfect solution, leaving the sky

light and serene; while, at other times, in consequence of those changes, which the electric fluid is incessantly occasioning, this invisible vapour, caloric being abstracted from it, is condensed into clouds*. These remain sustained in the atmosphere, until, by further condensation, their weight exceeds that of the inferior air, and then they descend, by their own gravity, in the form of rain. And here we may remark, in the law of gravitation, an evidence of wisdom, which is not unworthy of our attention. The rain does not fall in a stream, as from a pitcher, or a bucket, but in drops; and hence many evils, as well as inconveniences, are precluded.

But, if the cloud continued suspended, until it descended to the place, over which it was formed, the processes of evaporation and condensation would be of no avail.

* It may be necessary to observe, that none of the theories, yet offered to account for the formation of clouds, is completely satisfactory. The influence, however, of the electric fluid, is unquestionable; but it is the phenomenon itself, and not its proximate causes, with which our argument is concerned.

The dry land would be left, without a supply of water. Here also we have another concurrence of a mean to an end, evincing wisdom and design. The cloud is wafted by the wind from place to place, and rain is thus distributed over the whole surface of the globe.

But, in this process of evaporation, a circumstance, which necessarily strikes us, as perhaps the most wonderful, remains to be considered. The water of the ocean is salt, and rain is chiefly the condensed vapour, arising from its surface. Unacquainted with the fact, we should be naturally led to suppose, that the vapour, and consequently the rain, would be salt also. Were it so, it would prove fatal not only to the human species, but sooner or later to every organic being, living at present, either on dry land, or in fresh water. But the economy of nature is not at variance with itself. Here again we have exhibited the subserviency of a general law to the exclusion of a destructive evil, and the production of an important benefit. When salt water is subjected to evaporation, the

saline particles, with which it is impregnated, are not transmitted along with the vapour, but the whole remain behind. Nothing is evolved, but the pure element. What an admirable provision is this for the production of a fluid, indispensable to our existence! Is it not inexplicable inconsistency to ascribe ingenuity to the man, who contrived an apparatus for extracting fresh water from the ocean, and yet to deny the agency of intelligence in the original process, of which his was but a humble imitation?

But something more is necessary, than the mere supply of rain. We might possibly have too much, or too little. In order to exclude these evils, two adjustments are requisite; 1st, of the expanse of water to the surface of the land; and, 2d, of the quantity of caloric to the expanse of water. These adjustments we find established, so that the evaporation is preserved within the limits of utility, yet is amply sufficient for the supply of our necessities. It is very rarely found, and then only partially, to be either excessive, or defective.

The rain descends, as has been remarked, in drops, furnishing the vegetable tribes with aliment. In respect to plants, then, it has now done its office. Having moistened the soil to which they are attached, it has to them answered its end. But for the support of man, and the inferior animals, something more is required. The rain must be collected. If the soil were to absorb and retain the whole, its benefit to them, with every provision, which ingenuity could devise, would be of little, or no, value. Here then is an evil to be averted; or, perhaps we should rather say, a benefit to be secured. This is effected partly by beds of clay, spread under the surface of the ground, resisting the progress of the rain downwards, and rendering it accessible to human ingenuity; and partly by cavities of solid rock in hills and mountains, serving as reservoirs, into which dews, rain, and melted snow find their way through fissures*, and are there collected. Thence

* These fissures have the appearance of accident, if not of defects; they serve, however, a valuable purpose, and teach us to be cautious, in pronouncing that to be

it descends, as these overflow, through subterraneous passages, to the lower grounds, exhibiting itself in springs, or fountains. Rivulets proceeding from these, sometimes also from lakes, and augmented by currents from the sides of mountains, uniting their several streams, produce rivers. These again discharge their waters into the sea, and thus replace part of that waste, which is occasioned by evaporation. Thus there is an uninterrupted alternation of consumption and supply, the sea furnishing the land with rain, and the land, after being supplied with a sufficiency of water, returning the superfluous quantity to the sea.

But this is not all. A fact, no less striking and conclusive, remains to be considered. Water, when exposed *in vacuo* to the influence of caloric, would at the low temperature of 40° be converted into vapour; and, as the temperature generally exceeds this degree, no sooner would the water reach the surface of the ground, in

useless or faulty in nature, of which we do not perceive the utility.

springs, or lakes, than, if the evil were not prevented, it would instantly assume the form of vapour, and thus elude every effort to retain it. Thus would the end, which its production would answer, be wholly defeated, and the surface of the ground be left dry and barren. But this destructive effect is happily precluded, and an ample supply secured to us for all our exigencies. Here again we have another evidence presented to us of the utility of the atmosphere, forming an additional instance of that wisdom, which adapts not only means to ends, but the same means to a variety of useful purposes. The atmosphere, as has been remarked, possesses gravity; a column of it is ascertained to be an equipoise to a column of mercury of the height of 29½ inches,—this at least may be considered to be the height, taking the mean between the highest elevation, and the lowest depression. The atmosphere, then, pressing with this weight on the surface of the water, prevents its too rapid evaporation, and preserves it in its aqueous state. Were it not for atmospheric pressure, no ingenuity of man could prevent its escaping as

vapour, immediately after its descent, in a temperature at, or above, 40°. Nor is the quantity of caloric transfused into the water by the solar rays, at any time, or in any place, so great, as not generally to leave a sufficiency of water to supply our wants. Here we perceive the atmosphere first contributing to the production of rain, and then, by its gravity, preserving this invaluable fluid, for our necessities, and our comforts. If this process of production, and these means of preservation, and constant supply, of one of our primary necessities, do not afford evidence of design, it would be difficult to imagine what proofs would suffice. Let us briefly review the concurrences necessary to the formation of water, and it will appear hardly within the range, even of possibility, that they could be the result of chance, or any unintelligent cause. The absence of any one of them would preclude the effect.

The sea is necessary to furnish the fluid; it must be of sufficient extent to supply the quantity required; its water also, to preserve its salubrity, must be impregnated with salt, and it must likewise be kept in

a state of continual agitation. Here are four concurrent and independent requisites, all necessary to the production of the effect. In the next place, the sun is necessary to convert the fluid into vapour; his influence must be adjusted to the extent of its surface, so as to generate neither too much, nor too little; the vapour must be divested of all saline particles; the atmosphere is required to receive it; a mutual aptitude of densities is necessary to its ascent; the intromission of a colder air, or some cause or other, not well known to us, to abstract a portion of its caloric, and to condense it into clouds; an increased condensation, or a diminished gravity in the atmosphere, is necessary to its descent; attraction is requisite to its globular form, as it falls in drops; cavities at considerable elevation are necessary for receiving it; fissures in the earth for conveying it into these cavities; subterraneous passages for transmitting it to the valleys; beds of clay to prevent it from descending to an inaccessible depth; a certain density of the atmosphere to preserve it in the form of water; and rivers

to convey the superabundance to the sea. All these circumstances are requisite to the formation, and supply, of water. Could such a wonderful system of concurrences, such a chain of connected, yet independent, circumstances, all contributing to produce the effect, be the result of chance? The improbability, that any two of them should have been produced and adjusted by accident, is extreme; the chance, that all of them should have been so constituted, and arranged, is one to infinity.

If we direct our attention next to the wonderful manner, in which animals are provided with food and clothing, we shall discover the same irresistible evidence of intelligence and wisdom. The earth pours forth its treasures for the sustenance of every living thing. The beast of the field, the fowl of the air, and the fish of the sea, are all furnished with what is necessary to their subsistence, and well being. And what cannot fail to strike every considerate mind, is the wonderful aptitude of organic structure in every animal for receiving, masticating, and digesting, that species of aliment, which instinct prompts

it to choose, some subsisting wholly on vegetable substances, others being entirely carnivorous, and some of an intermediate character, belonging partly to both of these classes. Whether we examine the teeth, the stomach, or the other *viscera*, we find all of them suited to the food, which the animal seems destined to eat. This is a manifest and impressive instance of adjustment of means to ends. The associations might have been reversed, and the congruities destroyed. Chance cannot communicate skill, nor ignorance impart discrimination.

As the instinct, by which animals avoid what is noxious, and select what is salutary, is wholly unaccountable on the hypothesis of any senseless cause, so we observe in many of them another instinct, well meriting our attentive consideration, as furnishing another evidence of a Wise and Provident Author. It is that by which they make a provision for future wants. Is it possible to behold the bee, the ant, and other insects, which have no means of procuring food in winter, storing up in summer provision for that season, and

ascribe this instinctive foresight, if it may be so named, to chance? Does the ant, or the bee, before it has ever experienced a change of season, know the vicissitudes of the year? Has it any anticipation of winter?—any notion or foresight, that a season will come, when it cannot procure food? A colony of ants, which have never known what winter is, make provision against its approach. The insect is incapable of foreknowing the future, yet provides for, as if it foresaw, its approaching necessities.

When we behold the hive-bee constructing its cell, to contain its winter stock, and constructing it of that form, which is demonstrably the strongest and the most convenient, it seems the extravagance of absurdity to suppose, that the instinct is the offspring of ignorance. It not only provides for futurity, as if gifted with a prescience of its future wants, but it builds its storehouse, as if consulting convenience, economy, and strength. This is indeed one of the most extraordinary phenomena, that the animal world presents to our contemplation. It exhibits to us a fact in the history

of this little insect, calculated to excite admiration, and impress the firmest conviction of an Intelligent and Presiding Power.

It must be evident to every one, who has given the least attention to the obvious properties of different figures, that there are only three which will admit the junction of their sides, without any vacant spaces between them, namely the square, the equilateral triangle, and the hexaedron; of these, the last is the strongest, and the most convenient. In this form, we find, that all the cells are constructed. This is a curious and wonderful fact. And, what is equally remarkable, the middle of every cell, on one side, is directly opposite to the point, where the three partitions meet on the opposite side. By this position, the cell receives additional strength. "It is a curious mathematical problem", says a late candid and sagacious philosopher, "at what precise angle the three planes, which compose the bottom of a cell, ought to meet, in order to make the greatest possible saving, or the least expense of material, and labour. This is one of those problems, belonging to the

higher parts of mathematics, which are called problems of *maxima* and *minima*. It has been resolved by some mathematicians, particularly by the ingenious Mr. M'Laurin, by a fluxionary calculation, which is to be found in the Transactions of the Royal Society of London. He has determined precisely the angle required; and he found, by the most exact mensuration, the subject could admit, that it is the very angle in which the three planes in the bottom of the cell of a honey-comb do actually meet."*

* Reid's Essays.

The same curious fact was ascertained by a German mathematician. It was discovered by Grimaldi, that the greater angles of the cell were 109° 28′, and the smaller 70° 32′. Reaumur, presuming, that these angles were adopted for the purpose of saving material, proposed to Koenig, a mathematician of eminence, that he should determine, what should be the angles of a hexagonal cell, with a pyramidal base, to require the least material. By the infinitesimal calculus, he ascertained, that the greater angles should be 109° 26′, and the smaller 70° 34′ *. What an astonishing coincidence is this! An eminent mathematician is requested to solve a difficult problem; and it is found, that his conclusion, gained by the exercise of considerable ingenuity and thought, was practically adopted in the operations of the bee. How few

* See "Kirby and Spence's Entomology."

By whose instruction, or by what analytic process, did the bee arrive at the solution of a problem, which it required the genius of a M'Laurin to solve?* "Who taught it", says the same author, "the properties of solids, and to resolve problems of *maxima* and *minima*? . . . . Bees work most geometrically, without knowing any thing of geometry, somewhat like a child, who, by turning the handle of an organ, makes good music. The art is not in the child, but in him, who made the organ.

are capable of that scientific investigation, which this insect illustrates by its practice?

* Buffon has idly enough stated, that the hexagonal cells of bees are formed by the reciprocal pressure of the cylindrical bodies of the bees themselves against one another. If the fact were as he imagines, it would not invalidate our conclusion, or subserve the hypothesis of the Atheist. For the question is, whence come their bodies to be so shaped, as mechanically to reduce the cells to the figure of a hexagon? Does not the aptitude of the one form to produce the other, furnish evidence of design? Because the instrument is suited to the construction of the machine, is there no ingenuity displayed in forming the instrument? Surely the mutual aptitude of the tool, and of the material on which it is to act, for a certain effect, evinces skill and contrivance. It is by such short-sighted views, that the Atheist would exclude intelligence.

In like manner, when the bee makes its comb so geometrically, the geometry is not in the bee, but in that great Geometrician, who made the bee, and made all things in number, weight, and measure." To this conclusion, and no other, does this singular instinct irresistibly lead us; or we must believe, what no man can rationally believe, that the bee possesses a knowledge of mathematical science*.

* A bird's nest presents a phenomenon nearly equally wonderful, as the cell of the bee. This object is so familiar to us, that it excites little, or no curiosity. But let it be shown to a person capable of reflection, who had never seen a bird's nest; let him examine the materials, of which it is composed, their admirable aptitude for the purpose, which it answers, the convenience of its form for the shape and the warmth of its inhabitants, the neatness, the firmness, the lightness, with which its materials are twisted and interwoven, and let him be assured, that this curious structure was finished, in a few weeks, by a pair of birds, with no other implements, than the bill, and the claws, and he would be instantly filled with profound astonishment. And how would this emotion be heightened, when he learned, that the birds began to construct it just in time to be ready for incubation, that it was the first, that they had ever made, and had therefore no experience of the days or weeks necessary for its completion. We repeat, that if there be no intelligence or foresight in the animal, there must be wisdom and providence somewhere.

The clothing also of animals merits our attention, as equally indicative of a providential intelligence. Every species is furnished with a covering adapted to the sphere, in which it lives*. How can we

* The moth generated in woollen clothes, and also in furs and feathers, forms an exception. But here also we may discern the wonderful provision, which this insect is taught to make, in order to supply this want. It not only covers itself with a coat, but fabricates it of the most fit materials, curiously felting it of wool or hair: and this operation it commences immediately after birth, thus contradicting Paley's assertion, that man is the only animal, which is naked, and the only one, which can clothe itself. "The shape of its dress is adapted to that of its body—a cylindrical case, open at both ends. The stuff of which it is composed, is the manufacture of the *larva* of the *tinea*, which incorporates wool or hair artfully cut from our clothes, or furniture, with silk drawn from its mouth, into a warm and thick tissue; and, as this would not be soft enough for its tender skin, it also lines the inside of its coat, with a layer of pure silk. But the coat requires to be enlarged, as the insect increases in size. This the little occupant accomplishes, as dexterously, as any tailor. If the case merely require lengthening, the task is easy. All that is needful, is to add a new ring of hair or wool and silk to each end. But to enlarge it in width is not so easy a task. Yet it sets to work precisely as we should, slitting the case on the two opposite sides, and then adroitly inserting between them two pieces of the requisite size. It does not, how-

account for this congruity, if there be no Designing Cause? Do such wonderful aptitudes occur by chance? Why have not fishes the hair of quadrupeds, or the feathers of birds? Why is not the bear clothed like the tortoise, or covered with scales? Why has not the eagle the wool of the sheep, the fur of the beaver, or the shell of a crab? Why are animals in general in tropical climates provided with light or little covering, while in the polar regions they are defended by coats of the warmest texture against the rigours of the climate? Some Sceptics, ever anxious to exclude intelligence, and looking no further than for an immediate cause, have told us, that cold produces the latter effect, and gives to the coat a thicker substance. This is to shift the question, but not to answer

ever, cut open the case from one end to the other at once: the sides would separate too far asunder, and the insect be left naked. It therefore first cuts each side about half way down, and then, after filling up the fissure, proceeds to cut the remaining half; so that, in fact, four enlargements are made, and four separate pieces inserted."* What more could be expected from a rational being?

* Kirby and Spence's Entomology.

it. Why does the cold produce a warmer covering? How, but by design, is it so ordered, that the evil provides its own antidote? This is the question. And we may remark, in passing, that, though the Atheist can tell us, how worlds were made, and systems constructed, his own fancy supplying the schemes, yet with all his ingenuity he could not make a single hair, a single scale, or a single pile of wool. He can, notwithstanding, believe, that they were made by chance, or by an unintelligent necessity. Now we contend, that, instead of finding these aptitudes and congruities, if chance or necessity, and not intelligence, had presided at the formation of the animal world, it amounts to a moral certainty, that the majority would have been clothed with coverings, unsuitable to the sphere, in which they are placed; yet in no class or species whatever of the animal creation, is an example of such incongruity to be found. Can ignorance act with wisdom, or unintelligence effect mutual adjustments, by which evil is excluded, and good produced?

Inferior animals are incapable of cloth-

ing themselves; a covering, therefore, is provided for them. Man has the sagacity and the means to consult his comfort and his safety; no such provision, therefore, is made for him. If it be an evidence of wisdom to do nothing in vain, this distinction evinces intelligence.

Let us now attend for a moment to the difference observable in the mode, in which plants and animals are nourished and supported. Air, essential to the life of both, is supplied from the common atmosphere; but food and water are also necessary, and these must be either furnished, or procured. Man, and most other animals, possess a locomotive power, and they are subject to hunger and thirst. These appetites impel them to supply the wants of nature, and to move from place to place in quest of food. The oak, the cedar, and the whole vegetable race, on the contrary, are rooted, and stationary; they are fixed to the spot, in which they were planted, or sown, and are incapable of shifting in search of aliment. But they are not the productions of an ignorant cause; and the wisdom displayed in their formation, is equally conspicuous

in the means, by which they are preserved. Their food is supplied from the surrounding soil, in their immediate neighbourhood; their radicals serve for arms; and we perceive them extending their fibres, like hands, in search of nutriment. From these fibres the food is conducted upwards to the trunk, and branches, by the influence of solar heat, and capillary attraction. Is it by their own intelligence, that they thus procure support? Are they even aware, that aliment is necessary? Or do they know, that earth and water are indispensable to their existence? Without intelligence, without sensation, without consciousness, they supply their wants, as if they were sentient, intelligent, and voluntary agents. The Atheist may see nothing in this, but the impulse of a blind necessity; we ascribe it to the ordination of an All-directing Mind.

The whole economy of the vegetable world exhibits even in the most minute, and what we are too apt to consider, as trivial circumstances, striking displays of consummate wisdom. It is, because they are daily before our eyes, and familiar to

our senses, that they are viewed with indifference, or beheld without astonishment. We walk into an orchard, or a garden, and we perceive a tree, nearly enclosed by others, and almost suffocated through want of air. We see it pushing its boughs, through the only opening which is left, to procure the benefit of that atmosphere, which is indispensable to its health. "What", asked a late eminent physiologist*, "could a man, gasping for breath, do more, than run to an open door, or open window?" The man acts with intention; in the other case also, there must be design somewhere. Is it possible to contemplate, without admiration, the common familiar fact of a twig of honeysuckle, shooting in a straight line, until it becomes too long to support its weight; then, as if in order to gain strength, curling itself into a spiral, and if it meet with another twig, uniting with it for mutual support, and each screwing round the other, not in the same direction, for this would

* Dr. Walker, Professor of Natural History, in the University of Edinburgh.

be of no service, but in contrary directions, as if they understood the theory of action and reaction? These phenomena are of every day's experience, but they are not the less wonderful. To say, that the tree, or the shrub, acts by its own intelligence, or by its own volition, would be absurd; it appears equally ridiculous to affirm, that it acts by its own inherent power. The Atheist may deny to it both qualities; but, we maintain, that he cannot consistently affirm the latter, and deny the former. There is no evidence of inherent power in the tree, or the shrub, which will not equally prove inherent intelligence. The Atheist, ever governed, in his judgments, by narrow views, fancies, that he explains the cause of the phenomenon, when he tells us, that the tree is attracted by the light, and the open atmosphere. But will he suffer us to go one step further, and ask, how it is, that the atmosphere possesses, if it do possess, this power? How comes it to be so adapted to the nature and necessities of plants, as to produce this effect? This is the question, of which we require a rational solution, on any other

principle, than an Intelligent Cause. Strange it is, that we should ascribe to a blind fatality in the phenomena of physical nature, what, in common life, we should regard as infallible indications of intelligence and design.

It has been justly observed by the celebrated Fontonelle, that of all the sciences, astronomy and anatomy furnish us with the most impressive views of the existence and attributes of a Supreme Being; the former presenting us with the most striking evidences of His incomprehensible power, and the latter presenting us with equally impressive demonstrations of His consummate wisdom.

The attention of the reader has been already directed to a few phenomena in our planetary system, which manifest the Almighty hand of a Wise and Benevolent Author. We have also endeavoured to present to him some unequivocal indications of wisdom and design, in the provisions made for the continuation of the vegetable and the animal creations. We now proceed to offer to his deliberate consideration, a few of those evidences of in-

telligence and goodness, which are displayed in the corporeal structure, and the mental constitution, of man. I am fully sensible, that in this, as well as in the other appeals, which have been already made to the phenomena of nature, my observations can have no claim to the merit of originality. They have been urged again and again, enforced by all the ardency of the poet, all the dignity of the philosopher, and all the scientific accuracy of the physiologist. But to some readers, they may be new; and even to recal to recollection known truths, and direct the attention to the wonders of nature, which, though familiar to our observation, and therefore too often unheeded, are not the less worthy of our regard and admiration, is not always a useless office.

SECTION III.

"I will praise thee, O God, for I am fearfully and wonderfully made; marvellous are thy works, and that my soul knoweth right well."

In surveying the phenomena of the universe, diversified as they are in astonishing variety, from the stupendous orbs that roll in space, to the insect crawling on the summer's leaf, there is no object so much calculated to impress us with the conviction of a Supreme and Intelligent Power, as the construction of the human frame. Were there no other animated being on this globe, man alone would furnish conclusive evidence, that "verily there is a God." "Man is fearfully and wonderfully made." Whether we contemplate him as a mere animal, or as an intelligent and moral being, whether we examine the mechanism of his body, or the constitution of his mind, he is equally full of wonders.

Minutely to survey his corporeal structure, and to shew, that in every part of its complicated organization, it manifests con-

summate wisdom, exhibiting the clearest signatures of an Intelligent and Designing Cause, is a task, which I feel myself incompetent to undertake. Were I indeed qualified to execute it with success, it would occupy more space, than either our limits permit, or the establishment of our conclusion requires. I must therefore confine my attention chiefly to a few leading facts.

Whether we examine this complicated organism in parts, or as a whole, we are struck with the evidences of wisdom and design, which it impressively displays. In every stage of its progress from embryo to maturity, we perceive a concatenation of causes and effects, which it is impossible to contemplate without profound admiration. The provision made for the continuation of the species, the means by which the nutrition of the *fœtus* is effected, the natural and powerful energies by which its exclusion is accomplished, the sustenance provided for it even before its birth, the aptitude of that sustenance to its support, its instinctive eagerness to take it, and also its instinctive capacity to extract

it from its mother's breast, exhibit a series of connected concurrences of means to ends, which it seems the very extravagance of folly to ascribe to any other than an Intelligent Power. If we take a cursory view of the means by which the animal is afterwards sustained, the same conclusion forces itself on our conviction. The earth warmed by the sun, moistened by the rain, and clothed with a congenial atmosphere, necessary to the sustentation of vegetable and animal life, produces the food requisite for his support. Hunger, a painful sensation, excited by a fluid created in the stomach, impels him to take it. Hands are given him for administering it; the mouth is prepared for receiving it; the teeth for masticating it; the saliva for assisting deglutition and digestion; the muscles of the tongue and throat for transmitting it into the gullet; a valve on the larynx, or top of the windpipe, for preventing its admission into that aperture; the gullet for introducing it into the stomach; the gastric fluid in the stomach for dissolving and macerating it; the muscles of that organ for assisting digestion; the pancreas,

the liver, and the duodenum for converting it into chyle; the duct or channel for transmitting it after conversion to a vein in the neck, where it mixes with the blood; the vein in the neck for conveying it to the heart; the heart for sending it to the lungs; the lungs for purifying it from carbonaceous matter, by means of the oxygen inhaled, and, as has been supposed, for communicating heat*; a large vein in the lungs, for transmitting it back to the heart; the heart for propelling it by the arteries; the veins for returning it to the heart, after imparting nutriment to the whole; the provision made by emunctories, or organs of excretion, for expelling superfluous matter; present to our contemplation, such congruities of relation, such a chain of harmonizing causes

* Recent experiments by the eminent anatomist, Mr. Brodie, render this theory of Crawford's, which was adopted by Lavoisier and Priestley, extremely doubtful; and physiologists now seem disposed to believe, that no chemical agency can account for the production of animal heat, the generation of which, they conceive, depends on the integrity of the nervous system. The more probable opinion, however, as stated by Dr. Mayo, seems to be, that its cause still remains unknown.

and effects, such an astonishing concurrence of complicated means to a beneficial result, that one would suppose it to be morally impossible to resist an accumulation of evidence, so clear, so satisfactory, and so conclusive. Let any one relation be changed, any one link removed, any one organ abstracted, or cease to do its office, and disease and pain, if not death itself, immediately follow. How often do we eat and drink, without reflecting, that were it not for the little valve, or lid, on the top of the windpipe, which, without any effort of ours, is constantly ready to do its duty, we should be instantly suffocated! We breathe, without considering how the heart and the lungs are every instant employed in circulating the blood, without any exertion on our part*; how admirably they are fitted for this purpose; how wisely the atmosphere is adapted to the action of the latter, to which the sensi-

* If every inhalation required a distinct volition, breathing would be rendered intolerably laborious. It is a fact, that, when we direct our attention to it, and mark the intervals of inspiration, we feel ourselves soon fatigued.—*Mayo's* "Outlines of Human Physiology."

bility of the former is regularly respondent, and how abundantly the vital air, though continually consuming, is supplied by the vegetable world around us. Yet the smallest derangement of the organs of respiration, or the deficiency of the necessary fluid, or a disturbance in the ratios of its component parts, soon compels us to feel and to acknowledge, how wisely and wonderfully every thing is provided for easy and comfortable respiration, and how admirably the means are adapted to the end. Can so important and numerous adjustments be the effect of chance, or the production of an unintelligent cause?

Though we are aware, that there is almost no absurdity, which rooted prejudice will not maintain, no paradox, which the love of singularity will not tempt men to assert, we should yet startle with surprise on hearing it affirmed, that the hands were not made for grasping, the eyes for seeing, or the feet for walking, but that men by experience discovered, that these organs might be converted to such useful purposes *. This dogma is in itself abundant-

* Lucretius, lib. iv. 821—835.

ly extravagant; but will its advocates venture to maintain also, that the heart, the liver, the lungs, the lymphatics, and the absorbent vessels generally, over which the will has no power, were not made for their respective functions, but that the brute, the infant, or the man, by sagacity and experience, learn their utility, and employ them for the purposes which they are found to answer? This indeed would be a notion too ridiculous to maintain, as it is too monstrous for belief.

Whether we examine the muscular, the venous, the osseous, the vascular, or the nervous system, we find not only in each a striking adjustment of causes to effects, but likewise in all a concurrence of means to one common result in the perfection of the whole. In this combination of systems, if we were to regard the muscles alone, they would furnish sufficient evidence of intelligence and design in the Author of their mechanism. We shall not enlarge on the fitness of their texture, their possessing a contractile and relaxing power for the purposes of motion and rest, their terminating in tendons curiously and firmly

inserted into their respective bones, their mechanical action as levers of the third order, the best adapted for agility and quickness of motion, their surprising strength*, and the compactness with which they are arranged, we shall merely ask, what is the probability that 500 muscles shall by chance, or any ignorant agency whatever, be so distributed, that every one shall be in its proper situation, and that not one can be displaced, without detriment to the strength, the symmetry, or the beauty of the whole. Where the number of other conceivable collocations amounts almost

* Borelli has attempted to prove the strength of the muscles, with an accuracy approaching to the strictness of scientific demonstration. But the conclusions, at which he arrives, are so extraordinary, that the correctness of his *data* must be doubted, if not disbelieved. According to him, for example, when a weight of fifty-five lbs. is suspended by the elbow of the arm, the muscle called *deltoides* exerts a force of more than 60,000 pounds weight; and when a man, weighing about ten stone, springs upwards about two feet, the force of the muscles exerted is not short of 300,000 lbs. Whatever judgement may be formed, respecting the justness of these calculations, it is certain, that the muscles of the limbs possess a degree of power truly astonishing, and vastly greater, than from a mere inspection we should think it possible for them to have.

to infinity, it is utterly incredible that this arrangement should take place, in the absence of an intelligent and designing Cause. The improbability is extreme. But let us descend to particulars, and direct our attention to some of the organs of sensation.

SECTION IV.

Evidences of intelligence and design displayed in the organ of sight.

"Nobis fuit persuasissimum, atheismum, quem vocant, speculationem, h. e. obfirmatam de Deitate in universo nulla, persuasionem habere locum, aut inveniri non posse in eo homine, qui vel unius corporis organici, et speciatim oculi fabricam attento animo inspexerit."—*Sturm. Exerc. Acad.* 9 *de Vis. Org.*

Of all our senses, that of sight is the most useful. Its information is the most quick, the most extensive, and the most delightful. Let us examine the structure of the organ, by which this is effected. The argument, I am aware, has already been ably urged by Cheyne, Nieuwentyt, Derham, Paley, and others; but, as this organ af-

fords one of the most striking evidences of design, that the animal economy presents to our contemplation, the importance of the subject forbids us to overlook it in our enquiry.

I see the paper on which I write, and the characters which I make on that paper. If we survey the means, by which this perception is produced, that mind must be strangely constituted, which they do not strike with wonder and admiration. The rays of light proceed from the sun, or some luminous body, and impinge on the paper. Light is necessary to vision; this is the first requisite. But, if these rays all penetrated the paper, they would not touch the eye, and I should see nothing. They must therefore be remitted from the paper to the organ of sight; and they are accordingly reflexible. This is the second requisite. These rays must reach a small tablet, in the back part of the eye, called the *retina;* this is the third requisite. For this purpose, the *tunica cornea*, or coloured part, is transparent, and a small round orifice is made in the front and centre of the eye, called the pupil, through

which the rays pass to the *retina*. But the eye is an extremely delicate organ, and the rays, entering it with immense velocity must be such, as not to injure it. This is the fourth requisite. They are accordingly infinitesimally small.

Here are four independent circumstances, concurring to a beneficial effect, of which it is impossible to offer any rational explanation, unless by referring them to intelligence and design; 1st, The aperture for the admission of light; 2d, The integument or membrane for the protection of the eye; 3d, Its transparency, while other membranes are opaque; and, 4th, The nice and necessary adjustment of the rays to the delicacy of the organ. It seems superlative fatuity to believe, that these concurrences, and this singular exception, should be accidental.

But to vision it is not only necessary, that the rays be transmitted to the *retina*, but also that an image of the object be formed on this tablet. This is the fifth requisite. For the formation of this image, three humours are placed in the eye, the first a thin, transparent fluid, called the aqueous

humour, in which the iris floats loosely, dividing it into two parts; the second is the crystalline humour, having the consistence of common jelly, and of nearly a convex shape; the third is the vitreous humour, a clear, gelatinous fluid, having the anterior part excavated, so as to receive the crystalline humour, or convex lens. These three humours are clear and transparent, for the admission of light; and by this curious apparatus the rays of light are refracted, with that accuracy of adjustment, that a distinct image is formed on the *retina*. Let any of these requisites be abstracted, let the substance or the form of the lenses be changed, and vision becomes either indistinct, or impossible. But this is not all. Rays of light proceeding from surrounding bodies, enter the eye with more or less divergency, as their distance from it is either less or greater. Hence, while a certain degree of divergency might be so adapted to the refractive power of the eye, as to produce vision, a divergency greater or less than this would prevent an image from being formed on the *retina*. Hence objects, unless at certain distances,

would be invisible. What might be seen at the distance of a foot, of whatever magnitude, could not be seen at the distance of a yard, and conversely. To obviate this inconvenience, certain muscles are placed in this organ, which, by rendering the external figure of the eye more or less convex, and moving the crystalline lens more or less forward, lengthen or shorten the axis of vision, and thus converge the rays more or less quickly, so that those, which would otherwise form an image *behind* or *before*, now form it exactly *on* the *retina*.

The curious mechanism, also, which is employed for contracting and dilating the pupil, without altering its form, so as to admit less or more light, exhibits, what we should term, in human productions, a striking evidence of skill and ingenuity. Let a mechanic, as Paley observes, try to preserve the circular shape of any object, while he lengthens or shortens its diameter, and the attempt will convince him of the difficulty of the problem. And be it observed, that all these changes, necessary to distinct vision, are effected with-

out any effort of ours, and generally without any knowledge of the means, by which they are accomplished. Here, we may confidently, with Nieuwentyt, ask the most ingenious and expert optician, whether he could construct a dark lantern, as the eye in fact is, capable of being turned at pleasure, as readily and as easily as this organ, adapting itself to the various distances of objects, and forming, at every change of distance, a different image; "shortening itself, and flattening its glass" *, if directed to

* Until lately it was universally admitted as a fact, that the cornea is, by the action of certain muscles, rendered more or less round; and that, by this adaptation to various divergencies, we are enabled to see objects at different distances. From the experiments of Hosach and Ramsden, it appeared highly probable, that the power of altering the focal distance, does not reside in the crystalline lens, but in the cornea; and that for this purpose, it was capable of being elongated one-eleventh of its diameter. This was the universally received doctrine; it is now, however, opposed by several experiments made by Dr. Young, from which he concludes, that the eye is adjusted to different distances, by a change of form in the crystalline lens. Whethersoever of these hypotheses be adopted, our argument is equally valid. And, if we concur with Mr. Mayo in believing, "that the mechanism, by which the eye alters its focal length, remains still in obscurity", our ignorance of the means, by which this is

remote objects; and making itself longer, and its glass rounder, on the nearer approach of any object; dilating its aperture, when the light is too little, in order to admit more rays; and contracting it, when the light is too strong; and performing all these operations, without any external aid, but simply by its own power. Is it not then inexplicable inconsistency to admit, that such a production, if executed, would furnish a singular example of ingenuity, and yet deny, that the existing original evinces intelligence and design?

By the power of the eye to accommodate itself to the various degrees of divergency, with which rays proceeding from objects at different distances enter it, the image is formed, where it ought to be, exactly on the *retina*. But this alone would not suffice for distinct vision. Light is a compound body, consisting of rays of different colours, and these variously refrangible. Hence, if they had to pass through only

effected, may humble our vanity, and impress us with the conviction of a Superior Intelligence, while it stimulates to further enquiry, but cannot invalidate or weaken the argument for design.

one lens, confusion would arise from the different degrees of aberration. But the eye consists of three lenses, possessing different degrees of refractive power; and these are each so counterbalanced and adjusted to the different degrees of divergency and refrangibility of the coloured rays passing through them, that they all meet together at the proper place, in the same relative state, as when they entered the eye. Does the achromatic telescope evince ingenuity, and is the eye, of which the other is but a humble imitation, no proof of wisdom and design?

A distinct image is now formed; but something more is still necessary *. A

* An image of the external object being formed on the *retina*, by each eye, and these images being inverted, it has been a question much agitated, why we perceive only one object, and that object erect. It has been ingeniously suggested *, that, whatever may be the number of organic impressions, whether there be one, two, or twenty,—whether the images be erect or inverted, still, being connected with only one set of tactual feelings, they would always suggest the same sensations of touch, whenever the object were presented to the eye. If there were twenty images of the pen in my hand, these being asso-

* See "Dr. T. Brown's Lectures."

connexion must be established between this image and the organ of perception. To effect this connexion, a pair of nerves of large size run through from the brain, first in a curvilinear, and then in an oblique direction, inwards and forwards, uniting in their progress, and then again dividing. After the separation, they have to pass through the sphenoid bone in the temples.

ciated with that object, the recurrence of these images would suggest its presence. This is unquestionably true; but the difficulty seems to remain. If there are two images of the pen formed on the *retina*, and if my tactual feeling is always associated with these two images, how comes it, when one of these is withdrawn, as when one of the eyes is shut, the association being different, that the same object is perceived? This appears to be a difficulty, which this explanation does not remove. Besides, we know, that persons born blind, and who have gained the sense of sight by the aid of the oculist, do not see double. Association is incapable of accounting for this fact.

The image is inverted on the *retina;* yet we see it erect. The correction of this error has been referred to the sense of touch; but the simple and well known fact, that animals, from the moment of their birth, never mistake the top for the bottom, is at variance with this explanation.

For a more philosophical and satisfactory solution of the question, we would refer the reader to Mayo's "Outlines of Human Physiology."

Here, again, we observe another evidence of skill and contrivance. If no passage were afforded, the whole of the apparatus would be of no avail, and sight would be impossible. But a provision is made for the necessary communication. There are two small *foramina* or holes, through which the nerves proceed, until they are expanded on the soft or pulpy substance of the *retina*, and form an image of the object. Does not this simple fact evince design? Why are these *foramina* not found where they are not wanted, and found only where they are necessary? Can such a correspondence of parts be rationally ascribed to chance? Would not the most ignorant man, perceiving a rope running through the holes of a block or a sheave, conclude, that the holes were made, to furnish a passage, though he might be entirely unacquainted with the purpose, for which the block was intended? The purpose here, however, is known, if we can infer the end from the complexity of the means employed, and their aptitude to answer it.

So tender, also, and so easy of destruction is the organ of sight, that, if the rays

of light were not infinitely smaller than a grain of sand, moving with such inconceivable velocity, they would instantaneously destroy it. Can this striking adjustment be the result of chance? That there must be some cause, by which either the rays of light, and the law of refraction are accommodated to the structure of the eye, or the structure of the eye is adjusted to them, is a self-evident truth; and when we consider their mutual congruity, with the numberless contrary possibilities, all of them more or less adverse to the effect, the conclusion seems irresistible, that the cause must be intelligent.

But the most astonishing circumstance still remains to be considered. How does the connexion of the optic nerve with the image on the *retina* produce vision? How, by means of this connexion, do we perceive the object presented to the eye? This is a question, which no human ingenuity has been able, or ever will be able, to solve. And shall an apparatus, which no human art could form, no human sagacity can explain, be denied to be the production of wisdom and design? Does that, which it

exceeds our understanding to comprehend, require no skill or intelligence to construct?

Having taken a cursory view of the component parts of the eye, and its general mechanism, as the instrument of vision, let us next direct our attention to a few other particulars belonging to this organ, for the existence of which, and their obvious utility, it is impossible to account, on the hypothesis of chance. Its form is spherical—a figure best suited to the humours, which it incloses, and best adapted to the motions which it has to perform, as also for receiving the images of external objects. Is this aptitude of form to be ascribed to chance? Why was it not triangular, or square, or pentagonal, as it might have been, if it had not been the production of design? That it should assume the proper form by accident, out of all the possible forms, which it might have taken, seems utterly incredible. Its situation, likewise, is admirably accommodated to the purposes of vision. In no other part of the body, than where it is placed, could it command the same extent of sight, and be equally free from acci-

dent.—Had it been placed in the hinder part of the head, as it might have been, if left to chance, its position, though not rendering it absolutely useless, would have discorded with the position and structure of the hands and feet—the latter of which are evidently formed for moving forwards, while the hands, not directed by the eyes, would have lost much of their utility. Look at the various other parts of the body, where it might have been placed, all disadvantageous, and many where it would have proved actually useless, and then say, whether it could have been seated in the best of all situations, unless by the wisdom of a Disposing Power.

Let us look next at the means, by which it is protected against injury, and preserved in a sound and healthy state. It is lodged in a socket of bone, to guard it from accidents; and this cavity is provided with an unctuous matter, which not only affords a soft bed for this delicate organ, but also facilitates its rapid and necessary movements. The *cilia*, or eyelids, are obviously intended to protect it against insects, and minute substances floating in the atmo-

sphere, and also against occasional glares of light. Their roots are connected with small glands, which supply a liniment for lubricating the parts. For this purpose, also, there is a large gland placed in the forehead, near the outer angle of the eye, whence issues a limpid fluid, which by a canal or duct, passing through the membrane, or interior lining of the eye, called *tunica conjunctiva*, supplies it constantly with moisture, and this moisture is discharged by a small duct, continued through a perforation in the bone, and opening into the nose. I ask, with Paley, whether "any pipe or outlet for carrying off waste liquor from a dye house, or a distillery," and, I may add, passing through a stone wall, would be a stronger evidence of contrivance, than this duct, and this perforation of the bone of the nose, for transmitting the superfluous fluid?

But it is not only requisite, that the eye should be moistened; it is necessary, also, that it should be wiped and kept clean. The fluid serves to answer this end also. In order to effect this, a membrane is provided, called *membrana nictitans*. To this

membrane is attached a thin tendon or thread, and this to a muscle in the back part of the eye. The membrane is elastic, and its natural position is above the eye, so as to leave the organ of vision uncovered; but, when the muscle is contracted, the tendon draws the membrane immediately over the eye, which is for an instant closed and wiped. The muscle is then relaxed, and the membrane assumes its natural position *. And, what is truly won-

* Nieuwentyt tells us of a gentleman of his acquaintance, who was for some time deprived of the use of these little muscles, which serve to lift up the eye-lid, and thus almost lost the use of his sight, being obliged, as long as the defect lasted, to push up his eye-lids every instant with his hands. How little do we think of the utility of these muscles, constantly performing to us one of the most necessary offices! What lamentable credulity, to believe that they were placed there by accident! What blindness, not to perceive, that they must be the production of intelligence, designed for the end which they so beneficially answer! If they are chance productions, why do we not find as many without them, as with them? To tell us, that they exist by necessity, is merely to say, that they *are*, because they *must be*. Necessity cannot act in wisdom, nor account for congruities indicating design. Nay, if they do exist by necessity, why is the defect here mentioned ever found? Or why was not the necessity such, that they should not exist? Why are they

derful, all this is done several times in a minute, without obstructing vision, and without any sensible effort of ours. I say again, what an astonishing apparatus is this! What a complexity of machinery is necessary for the purpose of sight! Let any one of the requisites be wanting, and either the eye is diseased, or its power is destroyed. Could such an amazing concurrence of favourable circumstances result from chance? Were there no other evidence of intelligence and contrivance, than this single organ, it would furnish sufficient proof of a designing Cause.

Nor is it in man only, that we find the most striking evidences of wisdom and design in the structure of the eye. If this structure were invariably the same in all animals, the Atheist might ascribe it to necessity; but the structure varies according to the situation, in which the animal is placed, and is in every instance won-

not all, as this gentleman's for some time were, like sash windows, without weights and pullies, if we may use a familiar illustration, which, when raised, would instantly fall down again, unless supported by the counteracting weights?

derfully adapted to the sphere, in which it lives. In those whose destination is the open air, the crystalline humour is in the plano-convex form, suited to the refractive power of the surrounding medium. A lens, or humour of similar construction would in fishes prevent them from seeing, by reason of the greater refraction, which rays of light suffer, in passing through water. The crystalline humour, therefore, is suited to the medium, so as to counteract the greater degree of refraction, and is round. Whence is this distinction? Why is not the lens in both cases round, or in both cases plano-convex. It must be a sagacious necessity, which not only constructs the eye, but adjusts its parts to the sphere, to which the animal is destined. Can the distinction be rationally attributed to any principle, but intelligence? Those animals, again, which seek their food on the ground, have the pupil of the eye oval, the greater diameter going from side to side, that they may see further horizontally. Those, which occupy higher habitations, have the greater diameter from top to bottom, in order that they may see further upwards and down-

wards. Animals, again, which seek their food in the dark, have the posterior part of the choroid coat of a white colour; animals, whose eyes are fixed, and capable of only one direction, have a greater number*.

Now, if the question were proposed, what should be the form of the crystalline humour, in animals living in water, so as to enable them to see distinctly, notwithstanding the greater refractive power of the surrounding medium; we should answer, "not plano-convex, as in land animals, but round." This accordingly is its figure, in the various tribes of fishes. This is one adjustment. If we were asked, what should be the form of the pupil in the eyes of an animal, that had to procure its food, confined to the surface of the ground, and requiring a large field of horizontal vision, our answer would be, "that the pupil should be elliptical, the transverse diameter being at right angles to the nose." This accordingly is its form; and this is another striking adjustment. If the

* See "Cheyne's Philosophical Principles of Religion", p. 350.

question were, what should be the form of the pupil in those animals which live above the surface of the earth, the answer would be, "that the pupil should be elliptical, the transverse or larger diameter being vertical to the ground." This form, in such animals, it accordingly has. Here we have a third adjustment equally remarkable. If it were asked, what should be the form of the pupil in creatures, which had to procure their food around them, and from above them, and whose circumstances required an extended vertical, as well as horizontal vision, the answer would be, "that the pupil should be circular"; and we find it to be so. Here we have a fourth adjustment. If the question were proposed, what would be the best colour of the *tapetum*, or hinder part of the choroid tunic, for animals, which have to seek their food in the dark, the answer would be "white"; and we find it to be so, in cats, owls, and ferrets. Here is a fifth adjustment. If we were asked, how a provision is to be made for the safety of an animal, whose eyes were fixed, so that it could see those objects only, which are in a right

line before it, the answer would be, "by giving it a greater number, so that it might see on all sides", and this compensation, we find, takes place. Here is a sixth wonderful adjustment. If we were asked, what would be its best colour in graminivorous animals, as oxen, for example, we should answer, "green," that it may reflect to the retina the light proceeding from objects of that colour, other rays being absorbed, in order that they may see their food better, than other objects; and accordingly, we find, in them the membrane to be of a green colour. This is a seventh adjustment. There is also another, which is worthy of our attention. Animals, whose eyes are peculiarly exposed to injury, have either the faculty of drawing them back, within the protection of their bodies, or they are furnished with a hard integument, resembling bone or horn, so thin, however, as not to obstruct vision*.

When we contemplate, then, the numerous concurrent circumstances necessary to vision, when we consider the form of the eye, the best adapted to motion; its

* Cheyne's "Philosophical Principles of Religion."

position, the most advantageous possible; the admirable construction of its lenses, not only suited one to another, but as a system, or combination, precisely adjusted for the desired effect; the curious means, by which it is protected, moistened, and cleaned; the wonderful quickness, with which it is incessantly wiped, without interrupting the sight, and with no effort of ours,—when we contemplate also the various modes, in which the organ is adapted to the several conditions of different tribes of animals, it seems superlatively irrational to believe, that such adjustments could result from the agency of any ignorant cause. And, if to these we add the ultimate effect, I mean, sensation, the production of which no human wisdom can explain, one should think it morally impossible for any mind to be so darkened, as not to perceive in the structure of this little organ alone, ample and incontestable evidence of an Intelligent Cause.

If we contemplate the organization by which we enjoy the benefit of the other four senses, we shall discover an additional and striking proof of wisdom and design, em-

ployed in their formation. Let us direct our attention for a few moments to the organ of hearing. While its position is equally advantageous with that of the eye, its substance is peculiarly adapted to the comfort, safety, and the purpose, to which it is subservient. Of the latter observation the truth must be so obvious, to most of our readers, as to supersede the necessity of either proof, or illustration. But let us put the following case. Let us assume, that there are only three substances, of which the exterior ear could be formed, namely bone, muscle, or cartilage. If the substance were left to chance, it is evident, that there are two chances to one, that the ear shall be formed either of bone, or of muscle. But let intelligence interpose; let the physiologist decide. He perceives intuitively, that, if made of bone, it would have the advantage of rendering whispers more audible, and enabling us to hear at a greater distance; but he must perceive, at the same time, that these advantages would be more than balanced by these three great inconveniences. 1st, If made of bone, it would be troublesome. 2d, It

would be extremely liable to be broken. 3d, Noises, now tolerable, would be injurious to the organ, even if habit should serve to render them inoffensive. Would he then prefer a muscular, or fleshy substance? This, though less liable to certain injuries, than bone, and less troublesome and inconvenient, yet, instead of transmitting sounds clearly into the interior organ, would absorb and deaden them. A muscular, or fleshy substance, therefore, he would reject, and his choice would be the cartilage, as clearly possessing a superiority of advantages, or as being less liable to injury, and less inconvenient. And this choice he would make by necessity, but not that necessity, which acts by a blind impulse, but that which includes an exercise of judgement, and a voluntary obedience to the impressive evidence of superior utility.

Having thus briefly adverted to the substance of which it is composed, the form of the exterior ear next demands our attention. And here, the first thing, which presents itself to our notice, is the *helix*, or exterior circle or border. This is so

fashioned, by its tortuous cavities, as to stop and collect the sonorous undulations, and, by giving them a gentle and easy circulation, to convey them to the *concha*, or round cavity, at the entrance of the ear. Here being collected, they are transmitted to the interior, by a passage called *meatus auditorius*. But we shall not dwell on the utility of the several parts of the exterior organ; it may suffice to observe, that all those, whose ears have been amputated, hear indistinctly, and are reduced to the necessity of supplying the defect by their hands, or by a horn, or ear-trumpet, in order to collect the undulations, forming a cavity somewhat similar to that, which they have had the misfortune to lose. This furnishes sufficient evidence, that the outward ear is wisely adapted to the end, which it answers.

In the interior part of the ear, is the *membrana tympani*, like the head of a drum, stretched on a rim of bone, across the auditory passage, through which it receives the pulsations of the air. The structure of this passage merits our attention. In

the first place, it is artfully tunnelled and curiously turned, so as to furnish sounds with an easy entrance, while, by circulating them, it softens the pulsations of the atmosphere, before they reach the drum of the ear. Here is an advantage gained, and an inconvenience avoided. This could hardly be accidental. In the next place, while the eye is at regular intervals closed in rest, necessary, it would seem to the health of that delicate organ, the ear is always open, and serves often to apprize us of approaching danger, while we are asleep, and without protection. Again, the auditory passage being constantly open, it is necessary, that some provision should be made against the entrance of noxious insects, or other minute animals, which by lodging there might injure the organ. Accordingly we find several small glands, from which is secreted a bitter and nauseous excrement, or yellow wax, which not only serves to secure the passage, but likewise defends the drum of the ear from injury of the external air. This provision against inconvenience or harm, indicates a

knowledge of its structure, and how to preclude the evil; and is therefore an argument of intelligence in the cause.

The intercourse between the *tympanum*, which receives the undulations of the air, and the brain, or organ of perception, is maintained, by means of a labyrinth, as it is called, or cavity, furnished with three small semicircular canals, and a fourth taking a spiral course, like the shell of a snail. This labyrinth is filled with a watery fluid, through which the pulsations are communicated from the *tympanum*, or drum, to the auditory nerves. And it deserves our particular attention, that the branches of one of these nerves spread themselves partly to the tongue, partly to the eye, and partly to the muscles of the ear. This disposition is highly useful, for, a kind of sympathy, or consent, is thereby established among these three organs, so that most animals naturally, on hearing a strange, or alarming sound, erect their ears, in order to catch it, open their eyes to be upon the watch, and have their tongue ready to utter, what their feelings may

prompt them to signify. The whole of this apparatus, the several parts of which are so curiously adjusted, one to another, and so wonderfully adapted to the purpose, which they answer, appears admirably suited to that property in the atmosphere, by which it undulates, or waves, when agitated by the vibration of sonorous bodies. Without an atmosphere, all this *apparatus* would be useless; and if that atmosphere did not undulate, the ear would be of no service. And, if the air were capable of undulation, but if no body vibrated, the organ would exist in vain. On the other hand, if this vibration, and this undulation belonged respectively, as properties, to surrounding bodies, and to the atmosphere, yet, if the external ear were wanting, or, if it were made of a fleshy substance, or, if the auditory passage were closed, or, if the drum, the labyrinth, its fluid, or the nerves were wanting, hearing would be rendered either indistinct, or impossible. That so many circumstances should concur by chance, to the production of this important and valuable sense, is improba-

ble in the extreme. They indicate design, and consummate intelligence.

The structure of the other sensorial organs evince the same wisdom, but on the examination of these, our limits will not permit us to enter. I shall only observe, that the sense of touch, or feeling, is usefully and wisely, by means of the nerves, spread over the whole body, furnishing not only various sources of pleasure and gratification, but also apprising us, by the sense of pain, when any part of the body has suffered any injury.

Taking the human frame, as a whole, we observe a system of parts, calculated to excite astonishment, all harmonizing together, communicating help one to another, many of these parts also not only answering certain primary purposes, but likewise various secondary ends. We have the masticating and digestive organs for preparing the nourishment; the venous system, branching through the whole, for its circulation and distribution, and repairing the continual waste; the muscular for motion and action; the nervous, with its organic appendages, for sensation and thought; and

the osseous for the strength, support, and protection of the whole*.

But all this complexity of structure, all this curious and admirable connection of parts, and their several subserviencies to life,

* The construction of the bones furnishes a striking proof of wisdom and design. The column of the architect is solid, the masts of a ship are solid, the crow-bar of the labourer is solid; why are not the bones also solid throughout? We should naturally expect that they would be so. But they are hollow, and thus two advantages are secured, namely, strength greater than the same number of fibres would otherwise have furnished, and greater lightness for facility of motion. Galileo proved, that the number and length of the fibres being the same, the strength of a bone is in proportion to its diameter—so that a hollow bone of double diameter to a solid one, each having the same number of fibres, would be twice as strong. The utility of this structure, particularly in the quills of birds, requiring a combination of levity and strength, is a manifest adaptation of means to an end. Let me add, that the bones and the sockets in which they move, are mutually adapted with the greatest nicety, and supplied also with an unctuous fluid to lubricate the parts, to facilitate the motion, and to prevent the injurious effects, which would arise from aridity and friction. To suppose that the bones and the sockets were mutually adjusted by chance, would be much the same, as to imagine, that a lock, and a key adapted to it, were produced by particles of iron, without understanding, and without design.

health, motion, and sensation would, if unaccompanied with another indispensable requisite, be a wretched exhibition of ingenuity for the production of pain and suffering. Something is still wanting to complete the system, and that something is added.

We are continually surrounded by a most powerful and subtle enemy, whose destructive agency all the ingenuity and efforts of man would be unable to resist, and from which there is no possibility of escaping. The enemy to which I allude, is the atmosphere. This fluid, with all its salutary and vivifying properties, and indispensable as it is to life, health, and various other important ends, would prove destructive to the animal frame, if this were left unprotected against its close and continual hostility. We all know by experience the effect of exposing a wound to the air; the consequences are ulceration, and pain. The muscles of the body, if left naked to the atmosphere, would immediately become inflamed and sore; acute suffering would instantly ensue; and the body would rapidly be converted into a

mass of disease, which would irremediably terminate in putrefaction and death. Such would be the condition of the animal system,—a condition, which we cannot contemplate without horror and disgust. But here, as in every other instance, the wisdom of a provident Intelligence is conspicuous. To avert this evil, and to defend the human frame against so close and so dangerous an enemy as the atmosphere, it is completely covered with a skin, which, together with this most important use to which it is subservient, answers a great variety of other beneficial purposes in the animal economy. Is it consistent with reason to believe, that an integument so necessary to protection and health*, is the effect of random chance, or blind fatality? But let us proceed. Wisdom has not stopped here. Facts, equally astonishing and equally conclusive, remain to be exhibited, and deserve our attention.

* It has been computed, that, in temperate climates, more than one half of the food which we eat, passes off by perspiration, for which purpose the epidermis, or scarf skin, is admirably adapted. Let this issue be stopped, and the whole animal system becomes disordered.

If a curious piece of mechanism were shewn to us, which, by a complication of wheels, screws, pulleys, wedges, cranks, and other apparatus, performed a work, which had hitherto eluded all human ingenuity, we should certainly conclude, that it was the production of a machinist, possessed of the highest inventive powers. Can we examine an automaton, which, with a degree of gracefulness little inferior to that, which an accomplished female would display, executes on an organ a variety of airs, without admiring the ingenuity evinced by the machinist? Should we doubt for a moment, that it had a maker, and that he possessed a mechanical genius of a superior order? But how much higher would our admiration rise, how much more forcibly would our conviction of his talents and ingenuity be impressed, if we beheld a complicated machinery, by which this automaton produced others precisely similar to itself?* What should we think of the constitution of that person's mind who should deny, that all this furnished any evidence

* Paley's "Natural Theology."

whatever of genius, or contrivance? who should tell us, that the wheels, and cords, and pipes, and keys, and hands, had an innate tendency to place themselves in these positions, and that the harmony and concurrence of the various parts were to be ascribed to a principle of order? Or, what opinion should we form of his judgement, who should account for the existence of the machine by telling us, that the various parts of it formed themselves, and arranged themselves by necessity,—that no other order or form was possible, and that all was so, because it must be so? Is there any rational being, who would be satisfied with this explanation? or would our conviction of the ingenuity of the maker be weakened, much less subverted, by so absurd an explanation? or would it be satisfactory to be told, that the atoms, of which the automaton was composed, had, by the powers of lignification, metallification, consociation, configuration, harmonization, generation, and so forth, produced the machine? Or, if it were the only one of the kind, if the name of the maker were un-

known, if the age of it exceeded the date of the earliest annals of human art, would it be satisfactory to be told, that we have had no experience of such a machine's ever being made,—that it differed essentially from all other instruments,—that we never saw the maker,—that we cannot fancy that he exists,—that the machine had no origin? Would such sceptical and ridiculous objections as these, shake the conviction, which every man of common understanding must entertain, that it must have had a maker, though we know not who he is, or who he was.

There is yet another property belonging to the human body, which constitutes a decided superiority over every other mechanical structure, and furnishes, if any fact can furnish, the clearest evidence of intelligence and wisdom. Our animal frame is capable of enduring for more than one hundred years. Few arrive at this age, but some even pass this extended boundary. During the whole of this period, it is suffering continual waste; and the common calculation has been, that in seven years, every particle of its substance is en-

tirely new*. The old materials waste away, or are rubbed off, and these are replaced by others. Without entering into the curious and complicated process, by which this is effected, we have here a fact, which proves the superiority of the animal structure above every other. We have an evidence of skill and design, which no human ingenuity has been able to reach,—a machine renovating itself, and capable of repairing its own waste for a length of time. Should we not admire the ingenuity of the machinist, who should construct an engine, of which every particle should be worn away in the space of some weeks, and be as regularly replaced; which should last for seventy or eighty years, and in that period should be 1000 times wasted away by excretion or detrition, and 1000 times renewed? Is this continual reparation of the human frame no argument of an Intelligent Maker?

* An eminent anatomist† now delivers it as a fact, incontestably established, that, in the course of an ordinary life, every particle of our frame is changed several hundred times.

† See "Library of Useful Knowledge," No. IX. known to be the production of Mr. C. Bell.

We shall briefly advert to another fact, which it is impossible to explain on the hypothesis of necessity or chance. If we observed a machine so constructed, that, when the moving powers were applied, some parts of it continued uniformly in motion, while others moved and acted only occasionally, and never but when the purposes of the machine required their operation, we should not hesitate to ascribe this difference to the ingenuity of the inventor. Why should we not draw the same conclusion from a fact perfectly analogous, and still more striking in the structure of the human body? There are certain organs of our frame, the continual agency of which is necessary to the sustenance of the whole, and the support of animal life. These are the lungs, the heart, the liver, the arteries, the absorbents, and in truth the whole of the vascular system. Were these organs to cease from acting, death must instantly ensue. And were their action left to the government of the will, it is evident, that the derangement, if not the destruction, of the frame, must inevitably follow. Our attention, when

awake, would be so distracted by the volitions necessary to keep the organs in action, that the task would not be merely laborious, but absolutely impracticable; and during sleep, when the will has no power, they would lapse into inaction, and we should cease to live. But man is formed in wisdom. These organs, whether we are asleep or awake, act spontaneously, requiring no attention or effort on our part to continue their operation; and thus is the animal frame sustained.

On the other hand, there are certain organs of the body, whose agency is only occasionally required, as the voluntary nerves, with the tendons, muscles, and bones, with which they are connected. These, therefore, are subjected to the government of the will. They remain inactive, when their assistance is not wanted; but no sooner do we need their aid, than they are ready, every one to perform its office. Here is a distinction, the obvious utility of which evinces design. The agency of a power is superseded, where it would be utterly inefficient; and is admitted, only where its exercise is adequate to the ef-

fect, precluding the languor of inaction, and promoting corporeal and mental energy. Can an unintelligent cause thus wisely discriminate, performing what we cannot accomplish, and leaving to us what is within the compass of our own voluntary faculties?

But let us turn our attention to another property in the animal structure. The human body, like every other machine, is liable to accident, and subject to injuries; nor can all the caution, which wisdom can exercise, protect us against them. The injuries, which the mechanical inventions of human ingenuity are liable to suffer, they have no power to repair. If a rope, or an axle, or a tooth of a wheel, or a pulley be broken, the fracture is by the machine itself irreparable; and it may happen, that the injury renders it entirely useless. Here again we perceive the decided superiority of the human frame. If a limb be broken, a tendon ruptured, a muscle bruised, or a vein cut, we perceive, as it were, an effort made by the animal fabric to repair the injury. A counteracting or healing process commences immediately, nor does it

cease, unless opposed by some accidental obstacle, until a cure is effected. Art may serve to assist the process, and to hasten the desired result; but the reparation of the injury would be accomplished without the intervention of artificial aid. To ascribe the cure to a *vis medicatrix*, as its efficient and primary cause, is either to amuse us with a mere name, or to assign a fact as the cause of itself. If the *vis medicatrix* be the ordination, or the immediate energy, of an intelligent and designing agent, or a power constituted in our frame by its Author and Preserver, then the *vis medicatrix* is nothing else, than the mediate or immediate agency of Deity. But the truth is, we assume a name to account for a phenomenon. We have no evidence of the existence of such a power. A wound is inflicted; and all we perceive is a certain process, beginning and continuing until the injury is repaired. To say, that this process is the effect of a *vis medicatrix* is much the same, as to account for the motion of a watch, by a *vis motrix*, or the process of hearing, by a *vis auditrix*. Will an abstract term explain the principle, by

which a new bone is formed, when an old one is diseased, or unfit for use? Will it explain the principle by which the old one is carried off? To tell us, that it is by the power of absorption, is to account for a process by giving it a name. The simple and only pertinent question is this, does not the uniform existence of this process, by which the injuries of the body are repaired, indicate a wise and designing Cause? Why does such a process exist? Why is such a law, or principle, found in our constitution? We perceive, that it answers a salutary purpose, that the frame would have been less perfect without it, that it obtains throughout the whole of the animal economy; have we not therefore rational ground for concluding, that it was intended for the purpose which it is known to answer? Were we to admit, that Madam Nature, the Atheist's favourite agent, blind, senseless, and unintelligent as she is, should, in one of her youthful and random strokes, have formed such a being as man; or, to lay aside the figure, suppose, what seems absolutely impossible, that such a being should have been formed by a fortui-

tous conglomeration and configuration of atoms, and that life, we know not how, had been inspired into him, can we, without a degree of credulity truly childish and ridiculous, believe also, that, if a leg or an arm of his body should be fractured, blind nature, or an unintelligent necessity, or the same accident which gave it existence, would provide the means for effecting a cure, removing the pain, and restoring the limb to its former condition? The improbability of such a provision by any other than an Intelligent Cause, is extreme; but there is no improbability, which the Atheist will not believe.

It is a fact, also, which merits our attention, that, when a bone is in part wanted, a larger quantity of phosphate of lime than was previously required, is there formed, to repair the injury. Can it, with the shadow of probability, be ascribed to accident, that, when only the usual quantity is wanted, no more than the usual quantity should be furnished; but whenever a larger quantity is necessary, a larger quantity is supplied. This fact evinces design. It is a manifest adaptation of means to an end,

by a deviation from the usual process of nature, unaccountable on the hypothesis of necessity. It can be rationally regarded in no other light, than as a provision for the correction of an evil foreseen to be possible *.

* "The Library of Useful Knowledge", to which we have recently referred, and of which we would speak in terms of approbation, contains in Nos. 9 and 44, a Treatise on Animal Mechanics, in which powerful arguments for design are drawn from the mechanical structure of the human frame. One of these we shall here take the liberty to state, recommending at the same time to our readers the perusal of the Treatise itself.

The brain is the most important organ of the human body, and, if unprotected, the most liable to injury. Let it be proposed, then, as a problem, how to devise the best means for its defence. An intelligent being would intuitively perceive, that, if the receptacle or covering of this organ were composed of muscle, or cartilage, or any soft substance, it would be liable to be punctured, and the brain to be injured. These materials, therefore, he would reject, as unsuitable to his purpose. In order to resist a pointed instrument, or a blow, the covering must be hard. This quality seems indispensable. But hard substances are liable, when thin, to be very easily broken, and are at the same time susceptible of strong vibrations, whence injurious concussions would be communicated to the brain. While the liability to fracture might be, in a great measure, precluded by the form of the skull, as we find to be the fact, what would ingenuity suggest in order

With what consistency then, can we admit, that it would be an argument of match-

to avert the latter of these evils? Just that preventive, and no other, which we find existing. The *cranium* consists of two tables, or layers. The interior one is of bone, and therefore not easily penetrated, thus protecting the brain against pointed instruments. The exterior consists of a tough fibrous substance, scarcely susceptible of vibration. But for further security, the space between the two layers is lined with a soft substance, and as an additional protection, the outer surface of the skull is covered with hair. By these four guards against common casualties, namely, the hardness of the inner layer, the toughness of the exterior, the intervening soft lining, and the covering of hair, is the brain protected, vibrations being thus stifled, and concussions are prevented. This furnishes evidence of design; and this evidence is strengthened, 1st, By the fact, that when experience has taught us caution, and old age brings timidity, and when we are thus less exposed to dangers, the two layers are consolidated; and 2d, That in children, who are peculiarly liable to injuries of the head by falls, the skull, consisting of a single bone, is soft and yielding. If absolute security is not thus attained, a sufficient safeguard is furnished against common casualties, by which we should otherwise be annoyed, if not injured. It seems blindness or perversity to attribute this to accident.

The celebrated physiologist, to whom we are indebted for this valuable little Treatise, appears to have erred by likening, in one or two instances, the wisdom displayed in the human structure to some ingenious devices of man. Dr. Arnott, in his amusing and

less ingenuity, for a machinist to construct a machine, capable of supplying its waste, and repairing its injuries, and yet deny, that the human frame, possessing these superiorities over every other machine, displays, in its constitution, any evidence of design? It would be absurd, surely, to maintain, that because an organism requires for its maker a higher than a human cause, it, therefore, requires no cause. We estimate the intelligence and ingenuity of any artist or author, from the degree of these qualities which is displayed in the conception of his plan, and the execution of the work. Should we ever think of concluding, that because the production exceeds our powers to imitate, or our sagacity to understand, and because we never saw the maker, or know not at what period it was made, it, therefore, existed from eternity, or that it had no maker? Such a con-

instructive work on Physics, has detected the errors, and shewn that the supposed analogies do not exist. The correction, however, serves rather to strengthen than weaken the argument, and to shew the superiority of the animal structure, in respect to mechanism, above every work of human ingenuity.

clusion is manifestly irreconcileable with the inference, which we draw in every other instance, in which we find means suited to the correction of a possible evil, and the continuation of a permanent benefit.

I shall conclude this cursory view of the animal constitution of man, as affording conclusive evidence of intelligence and design, with remarking another property, by which the human frame is distinguished from every other, regarded merely as a mechanical system.

It would betray extreme ignorance of the powers of the human mind, and of the immensity of the field, which lies before it to explore, were we to assign limits to its farther advancement. The sagacity and industry of man have accomplished much, and are still achieving more, in the inventions of art, and the discoveries of science. Amongst the numberless displays, however, of human ingenuity, we should in vain search for a machine which possessed a power of voluntary motion, or a power of communicating motion to itself. And we may venture to affirm, without assigning too narrow limits to the progress of the

human mind, that the construction of such a machine must for ever mock the efforts of man. In every production of human contrivance, the application of some extrinsic power is indispensable to its motion. The watch has its spring, and that spring must be wound up; the clock has its pendulum, and that pendulum must be made to vibrate; the corn-mill has water, or wind, or steam, for putting it in motion, and these must be applied by the hand of man. Here the animal machine displays a vast superiority. It possesses a power of self-motion. We do not here allude to those motions, which are independent on the will, and are resolvable into what has been termed the energy of the vital principle*, the existence of which in man constitutes a most important pre-eminence over

* We have already endeavoured to explain the proper meaning of the term "principle". In its strict and metaphysical acceptation, it denotes that, in which any change originates. It differs from the term *law*, as *cause* differs from *mode*. In this sense, every principle must, in all our physical investigations, remain inscrutable: for ultimate causes can never be ascertained by human intelligence. But, though no principle, in the truly philosophical meaning of the word, can be accessi-

every merely mechanical structure, but that voluntary power over certain parts

ble to our research, the term is conveniently applied to denote sometimes the unknown cause, in which change originates, and sometimes that cause, beyond which our enquiries cannot proceed. We speak, for example, of "a principle of gravity." The expression is ambiguous. It strictly means the cause of gravity; but it is generally employed to denote a property ascribed to matter, by which bodies mutually approximate. But of this property, as an active inherent power, we have no evidence, effects only being perceptible to sense. In the language of philosophy, however, the term is convenient. If the principle, or primary cause were known, gravity would cease to be regarded as a principle. The primary cause, or principle, of life is equally concealed from us. We perceive regular series of animal phenomena, but nothing more. The mode of action is visible; the power or principle is unseen. Life, considered as an effect of this unknown principle, may be aptly enough defined, "an active state of the animal functions" *; but the principle of life, as that of gravity, remains hidden in impenetrable darkness. If the cause of life were known, there would be an impropriety in speaking of it as a principle. The Atheist looks no farther than matter for its principles, and its phenomena, assuming that its properties and powers are essentially its own. The Theist denies, that there is a single phenomenon to prove, that active power is an inherent attribute of matter, antecedents and consequents, not power, being the only objects of perception, and maintains, that either we can have no proof of intel-

* Lawrence's "Physiology."

of the muscular system, by which we move at pleasure the several members of the body. While we have in the vital properties the exhibition of phenomena, which no mechanical, or chemical agency can explain, we have in the effects of volition other phenomena, for which no physical powers, whether mechanical, chemical, or vital can account. I will to move my arm, and the motion follows. I will to open or close my eyes, and the apparatus is set in motion, by which the de-

ligence, or that the phenomena evince an Intelligent Cause. It cannot be too carefully borne in mind, that, when we speak of principles, properties, and powers, nothing more is meant, than that these are classes of our perceptions, the external causes of which we generalise, assigning to similar modes of phenomena the same common name; and that the manner of production, which is in fact, all that we know, is very different from the efficient cause, or the principle of causation. "A principle" in physics can import nothing more than a general fact, learned by experience, and assumed in our reasonings. As we cannot ascend higher in our enquiries, than these facts, they serve as a groundwork, or as principles of reasoning, of discovery, and invention. A knowledge of such principles, is a knowledge of general facts; but the principle, in which the changes originate, is very different from the facts themselves, or the modes of their production.

sired effect is produced. I will to move from place to place, and the tendons, muscles, and bones, obey the volition. This evinces a perfection in mechanical construction, which, as it surpasses the understanding of man to comprehend, no human ingenuity will ever be able to attain. The facts and the proximate causes we know; beyond this all is mystery. If, then, a machine of inferior powers, such as man can contrive and execute, be allowed to evince skill and design in the machinist, with what consistency can it be maintained, that a structure, not only more complicated, but possessing within itself a power, which the art of man cannot impart to the works of his hands, indicates no intelligence?

The faculty of voluntary motion, with which man is endowed, naturally leads us to survey him next, as an intellectual and moral being.

SECTION V.

"Jam vero animum ipsum, mentem hominis, rationem, consilium, prudentiam, qui non divinâ curâ perfecta esse perspicit, is ipsis rebus mihi videtur carere."—CIC. DE NAT. DEOR. Lib. ii.

IN examining the mental constitution of man, we shall find the utility of its various susceptibilities and powers, their harmonious relation, one to another, and their common subserviency to one great end, not, perhaps, less wonderful, though less obvious to examination, than the organization of the corporeal frame. If the structure of the human body evinces, in every part of it, the hand of a wise and designing Cause, the constitution of the human mind, as endowed with certain intellectual and active powers, by which we are enabled to perceive, and think, and will, proceeding, by gradual steps, from the elements of knowledge, until we ultimately arrive at science and philosophy, furnishes another most impressive evidence, that there exists a Supreme and Intelligent Being, its great origi-

nal, and the mighty Parent of all intellectual existence.

When we contemplate the constitution of man as a sentient, intellectual, and moral being, our attention is naturally directed, in the first place, to the appetites and instinctive principles of our nature, through the medium of which the individual and the species are fostered and sustained.

Of all the animal creation, man comes into the world the most helpless, and the most dependent. With an organization complete in all its parts, and every part fitted to perform its function, the infant would perish soon after its birth, if some provision were not made for its protection and support. Aliment is accordingly prepared for it, suited to its nature, and adapted to its taste, provided too in the breast of its mother, by a process no less admirable than necessary. And what renders the provision truly wonderful, furnishing an impressive evidence of design, is the exhibition of these three striking and important facts:—1st, That this aliment is prepared by a temporary deviation from the previous and usual procedure of nature.

2d, That it is not provided, until it becomes necessary. 3d, That the supply ceases, when it is not required. Can these extraordinary accommodations to varying circumstances be explained, by referring them to random chance, or an ignorant fatality? They indicate design; there must be intelligence somewhere. And, if it would be absurd to suppose, that the senseless atoms of the secretory organs are aware that a child is to be born, and that nutriment will be necessary for its support,—that they foresee the time, when this nutriment will be required,—that they know how to prepare it, —and that with a simultaneous consent, no particle resisting another, they all concur, not only in its production, but in continuing the process while requisite, and discontinuing it when useless; if it would be absurd to suppose this, we must conclude, that there exists an Intelligence, though invisible to us, by which these extraordinary effects are produced. The Atheist may fancy, that he explains the phenomena, when he traces the various steps of the process, noting antecedents and consequents, and assigning, what are termed, the imme-

diate causes. But we must remind him, that to know the conjunction of two or more phenomena, is not to know the principle of connection. The mode, or order of action is not to be confounded with the principle of agency. If the particles of the secretory organs act by necessity, it cannot be the necessity of brute ignorance, but their passive obedience to the ordination of intelligence.

But it would not be sufficient, that aliment were provided for the nourishment of the child; it must be administered, or the babe must die, and all that complicated organization, by which it is fitted for the enjoyment of life and health, would be a contemptible abortion. How then is this to be effected? For otherwise, the infant must perish, and the species become extinct. The question perhaps may seem to be idle, and unnecessary; so familiar to us, is the sight of a mother suckling her little innocent. Much indeed is it to be lamented, that, the more we are accustomed to see the wonders of nature, the more prone are we to regard them with stoical indifference. Reason and a sense of duty

might prompt the mother to give her breast to her infant child; but these principles can operate only in cultivated minds; in the brute creation they have no place; their influence, therefore, is circumscribed within narrow limits, and their agency is generally slow and uncertain. Still, however, they constitute a part of that mental provision, which is made for the support of the helpless infant. But on their uncertain and tardy operation, its life is wisely not left to depend. Other incentives more quick in their operation, as well as more certain in their effect, concur with the provision of physical nature, and stimulate the mother with resistless efficacy to administer to her babe that food, which is provided for its sustenance. These incentives are pain, pleasure, and instinctive affection, three of the most powerful stimulants, of which our nature is susceptible.

If the nutriment provided for the infant be suppressed, or withheld, pain is the necessary consequence. A febrile affection ensues, inflicted, we say, by the Parent of nature, for the violation of his

laws. This painful sensation can be relieved only by an extraction of the fluid, by which the infant should be nourished. The stimulus, therefore, to administer it to the little innocent, is almost irresistible. The mother is impelled to relieve herself. This is one, and indeed singly a sufficient provision, for securing nutriment to the infant offspring.

Again. The pleasure, which accompanies the act of suckling, is another powerful incentive to the mother, to impart her treasure to her hungry child. To be relieved from pain is enjoyment. But there is also a positive and direct gratification, both animal and intellectual, which every mother feels, in giving suck to her infant, and ministering to its earliest wants. In proof of this, we may appeal to every maternal heart, not dead to one of the tenderest sensibilities of our nature. With what admirable wisdom is it ordained, that the discharge of this important duty should be at once a relief from pain, and a source of pleasure! The child is fed, and the mother delighted.

Again. In every mother, there is im-

planted an instinctive affection towards her infant offspring. This principle is in its energy so powerful, that it generally subdues every other feeling. Self love is annihilated by its resistless superiority; and the mother cheerfully sacrifices a thousand comforts, nay sometimes life itself, to save her child*. To be convinced indeed, of the mighty influence of maternal love, we have only to consider the infant's incessant calls on a mother's affection, during the season, which she should give to repose,—we have only to consider the wakeful hours, which she willingly passes, in order to consult its ease, and administer to its comforts; her anxious solicitude on all occasions to anticipate its

* How forcibly does the following fact, related in a French journal, evince the strength of maternal affection! A woman, in the South of France, while she was busied in her garden, had the misfortune to be attacked by a wolf, who tore a hole in her side. The animal was accidentally frightened, and fled. The poor woman, feeling that the injury was mortal, but even in the extremity of her suffering, intent on the wants of her little infant, whom she had left in the house, applied her hand to the wound to close it, and returning to her child, gave suck to the babe, and then expired.

wants; and the smiles, which light up her countenance, when by the breast she stills its cries, or lulls it to sleep in a mother's bosom. A more effectual provision, at once gratifying to the parent, and soothing to the little innocent, it is impossible to conceive, than what is thus ordained for the sustenance of the infant babe. A process no less wonderful than useful furnishes the nutriment, the feeling of pain, and the sentiment of affection impels her to impart it, and the most exquisite delight accompanies the act. To a sympathetic heart no sight can be more delightful, none more calculated to awaken the most pleasing sensibilities of our nature, none better adapted forcibly to impress us with the conviction of a supreme and parental intelligence, presiding over all, and providing for our earliest necessities, when we can neither know them, nor express them, than the sight of an affectionate mother, feeding and nursing her infant child.

Nor is this affection confined to the mother, civilized by culture, enlightened by philosophy, or actuated by religious feeling. It is found in the negro, in the

Indian, nay even in the ferocious animal, that roams in the desert*. Can we contem-

* A bitch has been known, when suffering the agonies of dissection, to lick, with all the affection of a mother, her new born offspring. The following fact is almost too generally known, to render its repetition necessary here; but some of my readers may not be acquainted with it, and it furnishes a striking instance of maternal affection in a brute animal. The relation is contained in the "Journal of a Voyage towards the North Pole."—

"Early in the morning, the man, at the mast-head of the Carcase, gave notice, that three bears were making their way very fast over the ice, and that they were directing their course towards the ship. They had, without question, been invited by the scent of the blubber of a sea-horse, killed a few days before, which the men had set on fire, and which was burning on the ice, at the time of their approach. They proved to be a she bear, and her two cubs; but the cubs were nearly as large as the dam. They ran eagerly to the fire, and drew out from the flames part of the flesh of the sea-horse, that remained unconsumed, and ate it voraciously. The crew, from the ship, threw great lumps of the flesh of the sea-horse, which they had still left, upon the ice, which the old bear fetched away singly, laid every lump before her cubs, as she brought it, and dividing it, gave each a share, reserving but a small portion for herself. As she was fetching away the last piece, they levelled their muskets at the cubs, and shot them both dead: and in her retreat, they wounded the dam, but not mortally. It would have drawn tears of pity from any, but unfeeling minds, to have marked the affectionate concern, expressed by this

plate this provision for the nourishment of the helpless young, without sentiments of

poor beast, in the last moments of her expiring young. Though she was sorely wounded, and could but just crawl to the place, where they lay, she carried the lump of flesh, she had fetched away, as she had done others before, tore it in pieces, and laid it down before them; and, when she saw they refused to eat, she laid her paws first upon one, and then upon the other, and endeavoured to raise them up; all this while it was pitiful to hear them moan. When she found she could not stir them, she went off, and, when she had gotten to some distance, looked back and moaned; and that not availing her to entice them away, she returned, and smelling round them, began to lick their wounds. She went off a second time, as before; and having crawled a few paces, looked again behind her, and for some time stood motionless. But still her cubs not rising to follow her, she returned to them again, and with signs of inexpressible fondness, went round one, and round the other, pawing them, and moaning. Finding at last, that they were cold and lifeless, she raised her head towards the ship, and growled a curse upon the murderers, which they returned with a volley of musket balls. She fell between her cubs, and died licking their wounds." The understanding must be strangely sophisticated, which can refer this affection to chance, or blind necessity, as its cause.

We would not be thought, as arrogating to ourselves a superiority, either in judgement or sensibility, over those who entertain different views from ours, of the question before us; but we candidly avow, that we cannot envy the heart of that man, who can read this short narrative,

profound admiration? With the physical process of nature, how aptly and harmoniously do the instinctive feelings concur, to produce the necessary effect! If a sense of duty is absent, maternal affection is awake to supply its place. Does maternal affection slumber, or forget its office? Pain reminds the mother, that her infant wants food. It seems vain and foolish to reason with the man, who sees not, or professes not to see, in this astonishing adaptation of means to an end, the wisdom of a designing and benevolent Cause. Here are concurrences physical and mental, which, on the hypothesis of chance, are wholly inexplicable.

The instinct also, which directs the infant to its mother's breast, is another provision for its sustenance, and furnishes another link to that chain of evidence, by

without sympathizing in the feelings of the poor dam, thus cruelly bereft of her young, and falling a victim to her affection; nor respect his understanding, who does not, at the same time, behold in the powerful instinct, by which she was actuated, a conclusive evidence of wisdom and goodness, providing for the safety of the animal, until it be capable, as far as its nature will permit, of protecting itself.

which the existence of a Supreme and Intelligent Cause is clearly demonstrated. Those, who are anxious to exclude final causes, and who look no farther than to the immediate antecedent of any phenomenon, coldly tell us, that it is the sense of smell, which directs the infant, immediately after birth, to its mother's breast. Be it so. Does this serve to account for the fact; or does it render the instinct less wonderful? Or is our enquiry to rest here? We ask, why is the odour of the milk such, as to affect the infant's sense of smell, and attract it to its mother's breast? This is the question, and this question is not to be evaded, by referring the fact to attraction as its cause. Why are the quality of the one, and the sense of the other, mutually adapted, so as to produce the effect? Is there no wisdom, no design displayed in this mutual aptitude of a physical affection, and a natural instinct concurring to produce a desirable result? Or is the provision less wise, the means less wonderful, or the effect less beneficial, because it proceeds from a known cause? Let the Atheist assume his attraction, but

he is not to rest here. Whence originates this attraction? Why does it exist? If for the purpose of leading the infant to the source of nourishment, it implies design, and therefore, a designing Cause. If not for this purpose, which it evidently answers, for what purpose does it exist? He surely will not affirm, that it answers no end; and, if it answer any end, and its subserviency to that end be not discovered by the infant itself, we must conclude, that the end, which it answers, is the end, which was designed.

But this is not all. More remains to be accomplished; otherwise, what has yet been done, has been done in vain. Let us return to the physical provision for our infant necessity. The aliment is provided; but how is the babe to know the means, by which it is to be appropriated to his support? He has not been taught to suck; he is incapable of being taught; it is a mechanical operation, of which he is utterly ignorant, and which, in the absence of instinct, no human ingenuity could teach him. But higher wisdom than man's is interested in his preservation. Here we

find an end accomplished by concurrences of means, of which it seems superlative folly to offer chance or blind necessity as a satisfactory explanation. Let us look at the requisites indispensable to the effect.

In the first place, there must be an instinctive appetite in the child for the aliment, which is prepared for its sustenance and comfort. Were this wanting, the infant would reject its food. The second requisite is a vacuum round the nipple, that the pressure of the external air may contribute to the issue of the milky fluid. The third requisite is, that the lips and the tongue of the infant be adapted to this purpose. 4thly, It must instinctively know how to employ them, so as to produce the necessary effect. 5thly, While the lips are compressed, and respiration by the mouth is stopped, it must be taught by instinct to breathe through the nostrils*. Can such a series of concurrent

* Hence nurses, when they wish to stop a child from sucking, close its nostrils, and, being incapable of respiration, it quits the breast. See "Nieuwentyt's Religious Philosopher," Vol. I. p. 35.

requisites be ascribed to any other than an Intelligent and Designing Cause? These facts are all very familiar to us, but they are seldom regarded with due attention, otherwise they could not fail to awaken admiration, and lead every considerate mind to the conclusion, which such aptitudes of means to ends so powerfully enforce.

Having adverted to the facts, we fear to trespass on the reader's patience, by proposing the following questions to the consideration of the Atheist. Does the infant know, that he requires food? Does he know, that it is to be found in his mother's breast? Has he been taught, or has he learned by experience, how to extract it? Does he know, that there is an atmosphere? Does he know, that it has weight? Does he know, that a vacuum is partially necessary, that the gravity of the atmosphere may express the milk? Has he been taught how to produce this vacuum? Is he acquainted with a physical fact, which till modern times was unknown, and the discovery of which reflected immortal ho-

nour on its author? He is not; yet we find him acting, as if he perfectly knew all these particulars, and instinctively availing himself of a muscular power, and a physical law, to procure his food.

By the same instinct, though he is totally ignorant what muscles to employ, or how to use them in the operation of sucking, he is securely guarded against the possibility of mistake. How many things does the infant do by instinct, as if it were perfectly conversant with those physical laws, which it requires the sagacity of the philosopher to investigate! He performs an operation, which, were he divested of his natural instincts, no human ingenuity could ever teach him. These important and wonderful concurrences of means to an end indicate design. If there is neither experience, nor knowledge, nor science, in the child, they must exist somewhere. If there is no art in the machine, there must be contrivance in its maker.

There are other instincts, subservient to the safety and corporeal improvement of the infant, which, though of inferior

importance, are not unworthy of our attention, as affording evidence of a designing and providential Intelligence. The child has wants; it has pains and aches: but cannot tell what its wants are, or where its pains lie. But these wants must be supplied, and these pains relieved. Who then taught it to cry, that the mother, or the nurse, may understand that it suffers? Devoid of this instinctive power, accident or disease might put a period to its life, before the parent or the nurse were aware of its indisposition. The Atheist, in the true spirit of a short-sighted philosophy, may refer this indication, that the child suffers, to nervous irritation; but we cannot consent to rest here. We ask, whence originates this nervous irritability? Can ignorance adjust causes to effects, or is the connection between them the result of unintelligence? Is it the property of blindness to act with the wisdom of foresight? If this be possible, then all the discriminations of the Atheist, between ignorance and knowledge, wisdom and folly, virtue and vice, reasoning on the principle of con-

junction, are egregiously absurd. He must either abandon all his deductions in moral science, or he must renounce his hypothesis.

Again.—Why has the infant, and almost every other young animal, an instinctive disposition to move its limbs, and when capable of exercise, is almost incessantly in action? Do they know, that the motion of the limbs will contribute to their strength? Do they know, that the exercise of the body is necessary to health? that it conduces to the regularity of the animal functions, and contributes to the agility and vigour of the whole frame? In the restless activity of the child, in the friskings of the kid, the lamb, the kitten, and every young quadruped, we see an evidence of wisdom providing for their growth and strength, by an instinctive love of change, and a disposition to incessant action.

Again.—We have sufficient anatomical evidence for asserting, that man was formed to walk erect. The structure of the gluteal muscles, of the pelvis, and the foot, furnish

ample attestation of this fact. While the child learns to walk, we find him instinctively toddling and running, with his legs in a straddling position, that he may widen the base, and when he is in danger of falling backwards or forwards to this or to that side, endeavouring to counteract the tendency, by inclining himself to the opposite side. Now we know, that a body cannot fall, while the line of direction, that is, a line descending vertically from the centre of gravity, remains within the base. Has the infant any notion of the centre of gravity? Has he ever heard of the line of direction? Yet he acts instinctively, as if he were acquainted with both. Has he ever been taught, that, if he can confine this line within certain limits, he will not fall? How has he learned a general fact, which it required observation and experience to ascertain, and which constitutes a principle in the science of philosophy? He is guided by instinct, and not by knowledge. When he throws out his little arm, or extends his leg on one side, and thus throws the centre of gravity more to that side, or widens the base, to prevent his

falling to the opposite side, the cause and its effect are equally unknown to him *.

I am aware that it may be contended, that a child learns to walk by practice. It may be said, that these efforts to save himself from falling, are not ascribable to instinct, but to the lessons, which he gradually learns by experience. Here two things, which by this observation seem to be confounded, should be carefully distinguished, namely, the attempt dictated by instinct to widen the base, or to keep the line of di-

* Children, by reason of their heedlessness, their inexperience, and restless activity, are peculiarly liable to falls and contusions. Their heads are especially exposed to accidents. The mischief which would thence ensue, is in a great degree precluded by these preventive causes. 1st, Their skulls are elastic and yielding; they are therefore less liable to fracture. 2nd, Those parts of the head, which are most likely to come into contact with the ground, are the thickest. 3rd, The seams, or sutures of the pieces of which the skull is constituted, are loose, which serves to render concussion to a great degree harmless. Is it credible, that these three concurrent and salutary mitigations, if not infallible preventives, of an evil otherwise in every instance unavoidable, could be the effects of chance, or any unintelligent agency? See a "Treatise on Animal Mechanics," to which we have oftener than once referred.

rection within its limits, and the dexterity, which can be acquired only by experience and practice, in making the attempt successful. Instinct prompts to the one, experience teaches the other. But, even if the observation were founded in truth, the fact would still be resolvable into a principle purely instinctive. If experience teaches the child what has occurred in certain circumstances, will experience teach him also, that the same thing will occur in similar circumstances, or that the means which have now saved him from falling, will preserve him also in a like predicament? Does he know the connection between cause and effect? or how is he taught to believe, that similar causes produce similar effects? This principle is instinctive. But we perceive, that the instinct to which I would refer the fact, exhibits itself in the inferior creation, before experience can have any place. It was remarked by Borelli, that birds and fowls, which sleep resting on one foot, in order to ease the other, lay their heads under their wings, that the line of direction may fall within the base, or the foot, on which

they stand. Can any ignorant cause thus provide for their safety? In like manner we find, that a bird, not perfectly fledged, if driven or thrown from its nest, and having yet made no trial of its wings, instinctively expands them, in order to retard its descent, and to save itself from the effects of a rapid fall. These means of safety are not dictated by experience.

Let us proceed one step farther.—When the child moves a leg or an arm to save itself from accident, or when the bird expands its wings to protect itself from injury, who taught either the one or the other what muscles to move, in order to produce the necessary effect? Out of hundreds of these muscles, how comes it, that the child employs those, and those only, which are adapted to the purpose, in the absence of experience? How does it know to select those nerves, which are capable of exciting the necessary muscles? Nay, is there one man of a thousand, who knows by what nerves, muscles, and tendons, he moves a leg, an arm, or a finger, in a certain direction? Yet a calf, one of the most dull and stupid of all animals, has only to

will the motion of this or that limb, and the instruments are ready to obey the will. Can such instinctive and wonderful provisions for the preservation of the animal, before experience can have any influence, be considered as accidental? We might as well believe, that a person, who had never seen a musical instrument, would by chance, or physical necessity, always strike the proper key of an organ, to produce the desired musical note. The instinct confessedly operates to the preservation of the animal being, and the mechanical means employed, even without the knowledge of the animal, are subservient to the same purpose. The concordance of both, aptly concurring to produce the effect, evinces wisdom and design.

A short time elapses, and the infant is capable of receiving other aliment. The maternal supply ceases. Why is it furnished, while necessary; and when it is no longer wanted, withdrawn? Is this accidental? Is it the character of chance to produce the effects of intelligence? Or can an ignorant fatality act with the wisdom and foresight of a provident and dis-

criminating agent, now imparting, and now withholding, as necessity may require?

Advancing years, with increasing strength, more enlarged experience, and improving reason, supersede the necessity of parental care. The youth and the man can minister to their own wants. The ability, however, to provide for themselves, is not alone sufficient for the sustentation of their being: this is not the only requisite; something else, and that indispensable, is still wanting. Not only must they possess the power of supporting existence, but that power must be called into exercise. Reason might possibly teach them, that they are bound to preserve life, and prompt them to minister to its necessities. But here also, as was previously observed, its preservation is not left to depend on the slow and uncertain suggestions of the rational faculty. The love of ease might incline the savage to forbear from labour, to procure his food; and the multiplied engagements of civilized and active life might exclude that care, which the wants of nature require, for repairing the con-

sumption of corporeal strength. Indeed, if the pursuits of pleasure and of business were not incompatible with the languor and lassitude, which long abstinence from food necessarily induces, *reason* would be found but a feeble advocate, when urging the support of the corporeal frame. But against this evil, provision is wisely and amply made in the constitution of our nature.

Hunger and thirst, two most importunate appetites, impel us with resistless urgency to satisfy their cravings, and to recruit our exhausted strength. So forcible is the pain accompanying the extreme sensations of these appetites, and so exhilarating the pleasure, which we experience in gratifying them, that an incentive, sufficiently cogent, is thus provided in our mental constitution, to minister to the most important of all our corporeal necessities. No sooner does exhausted strength require to be repaired, and animal spirits to be recruited, than the calls of hunger and thirst admonish us of the fact, and stimulate us immediately to supply the want. It seems pitiable trifling to exclude

design, by resolving these painful sensations into a mere physical cause. Be it granted, that the feeling of hunger is occasioned by the secretion of the gastric fluid, and its action on the stomach; is not this secretion, by which the appetite is created, as strong an evidence of design and contrivance, as if the appetite existed without any known cause? Is it not by the subserviency of means to the production of an effect, that we are led to infer the agency of intelligence? And what, after all, does the presence of the gastric fluid explain? Nothing of any real importance to the main question. All that we know is, that the secretion of this juice is necessary to the feeling of hunger; and from its manifest utility, we infer a Designing Cause: but how it is, that its action on the coats of the stomach creates a mental affection, a desire, and a volition, remains inexplicable*. Here, as in every

* It may be remarked as a fact, manifesting wisdom in the cause, that under the influence of fever, when food would be injurious to the patient, the stomach ceases to secrete the stimulating fluid, and the appetite is not excited.

other instance, in which we would investigate the secret power by which Supreme Intelligence educes effects from causes, we are lost; and philosophy is compelled to confess her ignorance. This, however, seems evident, that combinations of causes and effects, indispensable to our existence, the principle of which is to us a profound mystery, all that we perceive being its beneficial results, cannot be referred to an unintelligent agent.

But something more is necessary than the stimulus of appetite. While the earth pours forth its stores of nutriment for our support, it presents to us also some productions unwholesome and deleterious. Against these the animal must be guarded; he must be capable of distinguishing what is salutary from what is noxious. If left, without direction, to eat and drink whatever accident might offer, pain, disease, or death would inevitably follow. Man, therefore, in his natural state, and every other animal, are endowed with an instinct, by which they are taught to avoid what is pernicious, and select what is salutary. The horse, for example, the cow,

the sheep, loathe animal food, because their stomachs are incapable of digesting it*; and we see the brute creation generally abstaining with the greatest care from every plant, and every species of herbage, which would prove detrimental or destructive. How cautious is the dog to smell what is offered to him, as food or drink, before he touches it! And not satisfied with the approbation of only one sense, he appeals next to taste, to which if it be offensive, he rejects it as injurious. Can an unintelligent cause teach him this caution? Or was the organ of smell placed by accident so close to the mouth, so that nothing can enter by the latter, without an admonition from the former of its salutary or noxious quality? The subserviency of

* It is no argument against this position, that sheep have been known, when pressed with extreme hunger, to satisfy their appetite, in repugnance to their nature, by eating animal food.

Botanists have enumerated about 500 varieties of grass, and have specified the numbers selected by different graminivorous animals. Of horses, oxen, sheep and goats, it would appear, that the first of these species are the nicest in their choice, the horse eating of 262, and leaving 212.

these organs, combined with the natural instinct to the direction of the animal in the selection of its food, cannot be questioned. How then can it be doubted, if we form consistent judgements, that they were ordained by wisdom, in order to accomplish the ends which they manifestly answer?

As the painful feeling accompanying hunger impels us to take food for the support of our frame, so the sensation of pain, generally considered, serves to apprize us, that injury or disease has affected the system, and endangered its safety, thus stimulating us to resort to means for repairing the one, or expelling the other. And, while the feeling of pain impels us to remove the evil by the application of a remedy, our innate aversion to suffering prompts us to avoid, whatever we apprehend would injure the body, or derange its functions.

Thus does the instinct of maternal affection, roused, if dormant, by a painful sensation, and concurring with the physical process of nature, provide for the nourishment of the infant; the appetites of

hunger and thirst urge the youth and the man to support their being, by supplying nature's returning wants; instinct directs to wholesome, and restrains from pernicious food; and the sense of pain apprizes them, that the frame is disordered, while it impels them to apply the necessary remedy. To resolve these instinctive feelings into organization as the cause, is as nugatory, as it is unphilosophical. It is true, that, wherever we find instinct, there also we find organization; but do we discover the converse of this fact likewise to be true? On the contrary, we perceive organization existing, where there is no instinct, not even life itself. Hence we are warranted in concluding, that the former cannot be the cause of the latter, though necessary to its existence, otherwise, where the one were discovered, the other would be uniformly found to accompany it.

If these instincts are useful, as cannot be denied, one or other of these two conclusions seems inevitable. They either must be intended for the purpose, which they answer, or they were not designed for that end, but their utility was learned by man's